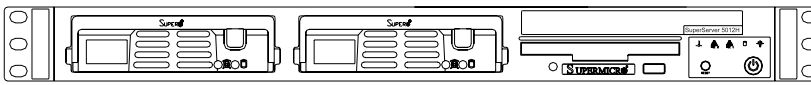
SUPERMICRO®

SUPERSERVER 5012B-6
SUPERSERVER 5012B-E

5012B-6



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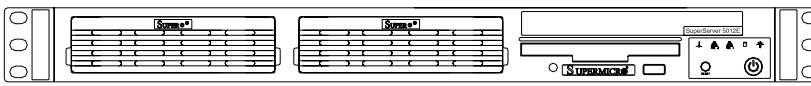

USER'S MANUAL

Revision 1.1

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 5012B-6/5012B-E. Installation and maintainance should be performed by experienced technicians only.

The SuperServer 5012B-6/5012B-E is a high-end single processor 1U rackmount server based on the SC810 1U rackmount server chassis and either the Super P4SBR (for the 5012B-6) or the P4SBE (for the 5012B-E) mainboard. The P4SBR/P4SBE mainboard supports single Intel® Pentium™ 4 processors up to 2.60 GHz in 478-pin microPGA sockets.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the Super P4SBR and P4SBE mainboards and the SC810 chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 5012B-6/5012B-E into a rack and check out the server configuration prior to powering up the system. If your server was ordered without the processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer to this chapter for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 5012B-6/5012B-E.

Chapter 5: Advanced Motherboard Setup

Chapter 5 provides detailed information on the P4SBR and P4SBE motherboards, including the locations and functions of connectors, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the motherboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC810 1U rackmount server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SCSI or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: BIOS Error Beep Codes and Messages

Appendix B: Post Diagnostic Error Messages

Appendix C: System Specifications

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Chapter 1
Introduction

1-1 Overview

The Supermicro SuperServer 5012B-6/5012B-E is a high-end single processor, 1U rackmount server that features some of the most advanced technology currently available. The SuperServer 5012B-6/5012B-E is comprised of two main subsystems: the SC810 1U rackmount chassis and the P4SBR (for 5012B-6) or P4SBE (for 5012B-E) single 478-pin Pentium 4 microPGA processor mainboard. Please refer to our web site for information on operating systems that have been certified for use with the SuperServer 5012B-6/5012B-E (www.supermicro.com).

In addition to the mainboard and chassis, various hardware components may have been included with your SuperServer 5012B-6/5012B-E, as listed below.

- One CPU heatsink
- One (1) 1.44" floppy drive
- One (1) slim CD-ROM drive
- One (1) SCA SCSI backplane (5012B-6 only)
- Two (2) SCA SCSI drive carriers (5012B-6 only)
- SCSI Accessories (5012B-6 only):
  One (1) internal 68-pin Ultra160 SCSI cable for SCA SCSI backplane
  One (1) set of SCSI driver diskettes
  One (1) SCSI manual
- One (1) 5V 32-bit, 33 MHz PCI slot riser card
- Rackmount hardware (with screws):
  Two (2) rack rail assemblies
  Six (6) brackets for mounting the rack rails in a rack/telco rack

- One (1) CD-ROM containing drivers and utilities:
  Intel's® LANDesk Client Manager
  LAN driver
  SCSI driver (5012B-6 only)

- SuperServer 5012B-6/5012B-E User's Manual

1-2 Server Chassis Features

The SuperServer 5012B-6/5012B-E is a high-end, scaleable 1U rackmount server platform designed with today's most state-of-the-art features. The following is a general outline of the main features of the SC810 chassis.

System Power

When configured as a SuperServer 5012B-6/5012B-E, the SC810 chassis includes a 250W power supply.

SCSI Subsystem (5012B-6 only)

The SCSI subsystem on the 5012B-6 supports two 80-pin SCA Ultra160 SCSI hard drives. (Standard 1" drives are supported. SCA = Single Connection Attachment.) The SCSI drives are connected to an SCA backplane that provides power, bus termination and configuration settings. The SCSI drives are also hot-swap units.

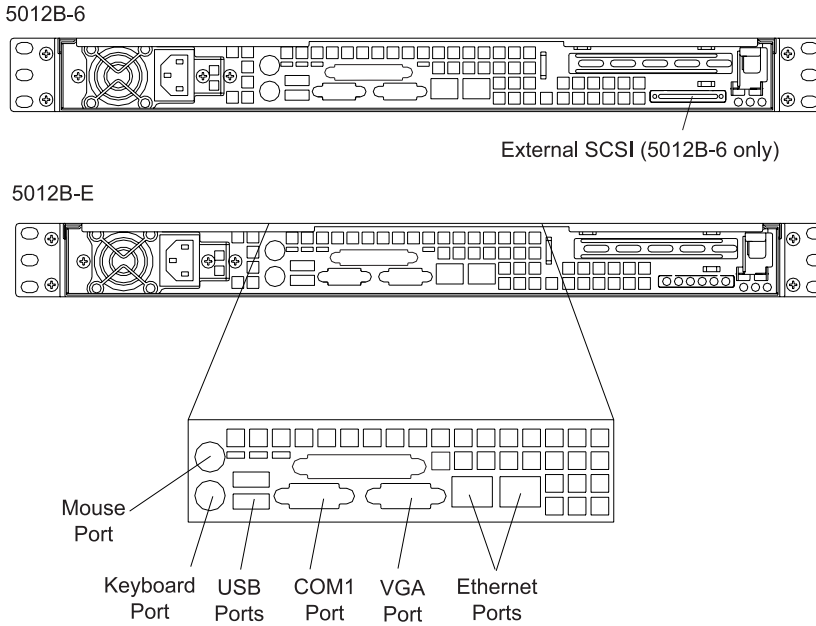
Control Panel

The SC810's control panel provides important system monitoring and control information. LEDs indicate power on, network activity, hard disk drive activity and system overheat conditions. The control panel also includes a main power button and a system reset button.

Rear I/O Panel

The SC810 is a 1U rackmount chassis. Its I/O panel provides one motherboard expansion slot, one COM port (another is internal), two USB ports (5012B-6 only), PS/2 mouse and keyboard ports, a graphics port and two Ethernet ports. (See Figure 1-1.)

Figure 1-1. Rear I/O Panel



Cooling System

The SC810 chassis has an innovative cooling design that includes a 10-cm blower system cooling (intake) fan and one optional 4-cm fan that can be installed in the midsection of the chassis. The blower fan plugs into a chassis fan header on the motherboard and operates at full rpm continuously. If it breaks down, the ambient air temperature inside the chassis will rise and activate an overheat LED.

1-3 Mainboard Features

At the heart of the SuperServer 5012B-6/5012B-E lies the P4SBR/P4SBE, a single processor motherboard designed to provide maximum performance. Below are the main features of the P4SBR/P4SBE.

Chipset Overview

Intel's 845 chipset is made up of three main components:

The 82845 Memory Controller Hub (MCH) with an Accelerated Hub Architecture (AHA) bus.

The 82801 BA I/O Controller Hub (ICH2) with an AHA bus.

The 82802 AB Firmware Hub (FWH).

Memory Controller Hub (MCH)

The MCH includes the host (CPU) interface, SDRAM interface, ICH2 interface and 4xAGP interface for the 845 chipset. It contains advanced power management logic and supports three DIMMS for up to 3 GB of unbuffered SDRAM. The AGP 2.0 interface supports 4x data transfers and operates at a peak bandwidth of 1.6 GB. The MCH host interface bus runs at 400 MHz.

I/O Controller Hub (ICH2)

The I/O Controller Hub (ICH2) subsystem on the P4SBR/P4SBE integrates many of the input/output functions of the 845 chipset, including a dual channel ATA/100 Bus Master IDE controller and two USB controllers that offer 24 Mbps of bandwidth across four ports. It also provides the interface to the PCI Bus and communicates with the MCH over a dedicated hub interface bus -- the AHA. The ICH2 also features an enhanced AC97 interface that supports full surround sound for the Dolby Digital Audio used on DVDs.

Firmware Hub (FWH)

The FWH is a component that brings added security and manageability to the PC platform infrastructure. The FWH stores the system BIOS and video BIOS to eliminate a redundant nonvolatile memory component.

Processors

The P4SBR/P4SBE supports single 478-pin Pentium 4 microPGA processors at 2.60 GHz at a front side (system) bus speed of 400 MHz. Please refer to the support section of our web site for a complete listing of supported processors (http://www.supermicro.com/TechSupport.htm).

Memory

The P4SBR/P4SBE has three (3) 168-pin DIMM sockets that can support up to 3 GB of unbuffered PC133 and PC100 low-profile SDRAM modules. Module sizes of 128 MB, 256 MB, 512 MB and 1 GB may be used to populate the DIMM slots. The DIMM slots on the P4SBR (5012H) are situated at a 25 degree angle to create a low profile and to promote efficient airflow through the chassis.

Onboard SCSI (5012B-6 only)

Onboard SCSI is provided with an Adaptec AIC-7899 SCSI controller chip, which supports dual channel, Ultra160 SCSI at a burst throughput rate of 160 MB/sec for each channel. The P4SBR provides two SCSI ports: one internal 68-pin LVD Ultra160 connector (on Channel A) and one external/internal (shared) 68-pin Ultra160 SCSI connector (channel B).

PCI Expansion Slots

The P4SBR/P4SBE has five 32-bit, 33 MHz PCI slots available. One riser card is included with the system for use with 32-bit PCI cards.

Network Interface Controllers (NIC)

The P4SBR/P4SBE supports two Network Interface controllers (NIC) based on Intel's 82550 10/100 Mbps fast Ethernet controller chip.

Onboard Controllers/Ports

An onboard IDE controller supports one floppy drive and up to four UDMA/100 hard drives or ATAPI devices. Onboard I/O ports include one COM port, one parallel port, two USB ports, PS/2 mouse and keyboard ports, a video (graphics) port and two LAN (NIC) ports, which back each other up in case one port loses its connection.

Other Features

Other onboard features that promote system health include eight voltage monitors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.

1-4 Contacting Supermicro

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Web Site: www.supermicro.com.tw
Technical Support:
Email: support@supermicro.com.tw
Tel: 886-2-8228-1366, ext.132 or 139

Notes

Chapter 2
Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 5012B-6/5012B-E up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your SuperServer 5012B-6/5012B-E system has come to you with the processor and memory preinstalled. If your system is not already fully integrated with a motherboard, processor, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the SuperServer 5012B-6/5012B-E

You should inspect the box the SuperServer 5012B-6/5012B-E was shipped in and note if it was damaged in any way. If the server itself shows damage, you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the SuperServer 5012B-6/5012B-E. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

The box the SuperServer 5012B-6/5012B-E was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets, etc.).

Warnings and Precautions!

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In a single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the power supply units and hot plug SCSI drives (5012B-6) to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

2-4 Installing the SuperServer 5012B-6/5012B-E into a Rack

This section provides information on installing the SuperServer 5012B-6/5012B-E into a rack unit. If the 5012B-6/5012B-E has already been mounted into a rack, you can skip ahead to Sections 2-5 and 2-6. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. The following is a guideline for installing the 5012B-6/5012B-E into a rack with the rack rails provided with the system. You should also refer to the installation instructions that came with the rack unit you are using.

Identifying the Sections of the Rack Rails

You should have received two rack rail assemblies with the SuperServer 5012B-6/5012B-E. Each of these assemblies consist of two sections: an inner fixed chassis rail that secures to the 5012B-6/5012B-E (A) and an outer fixed rack rail that secures directly to the rack itself (B). A sliding rail guide sandwiched between the two should remain attached to the fixed rack rail (see Figure 2-1). The A and B rails must be detached from each other to install.

To remove the fixed chassis rail (A), pull it out as far as possible - you should hear a "click" sound as a locking tab emerges from inside the rail assembly and locks the inner rail. Then depress the locking tab to pull the inner rail completely out. Do this for both the left and right side rack rail assemblies.

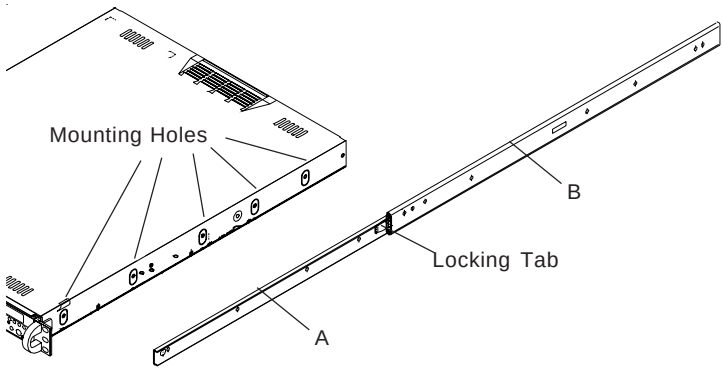


Figure 2-1. Identifying the Sections of the Rack Rails

Installing the Chassis Rails

Position the fixed chassis rail sections you just removed along the side of the 5012B-6/5012B-E chassis making sure the five screw holes line up. Note that these two rails are left/right specific. Screw the rail securely to the side of the chassis (see Figure 2-2). Repeat this procedure for the other rail on the other side of the chassis. You will also need to attach the rail brackets when installing into a telco rack.

Locking Tabs: As you have seen, both chassis rails have a locking tab, which serves two functions. The first is to lock the server into place when installed and pushed fully into the rack, which is its normal position. Secondly, these tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.

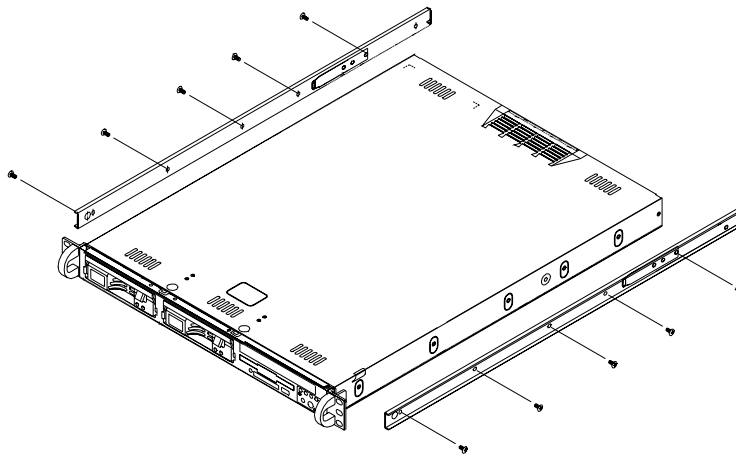


Figure 2-2. Installing Chassis Rails

Installing the Rack Rails

Determine where you want to place the SuperServer 5012B-6/5012B-E in the rack (see Rack and Server Precautions in Section 2-3). Position the fixed rack rail/sliding rail guide assemblies at the desired location in the rack, keeping the sliding rail guide facing the inside of the rack. Screw the

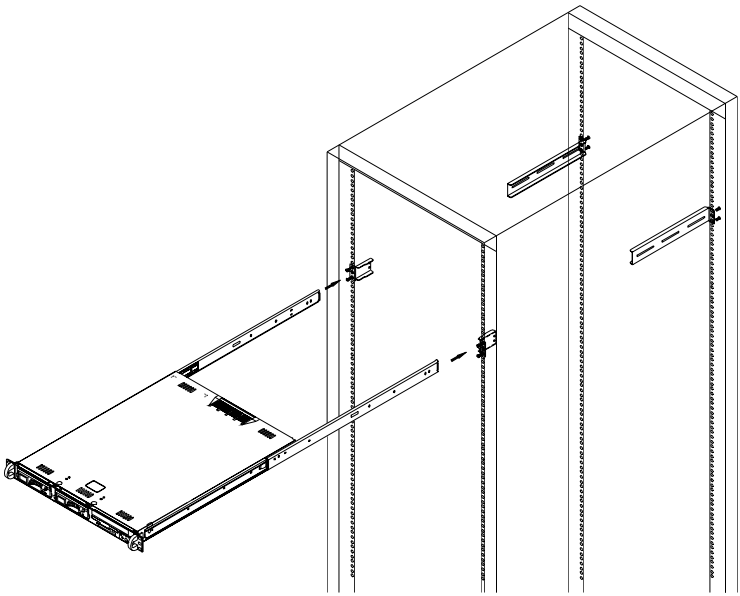
assembly securely to the rack using the brackets provided. Attach the other assembly to the other side of the rack, making sure that both are at the exact same height and with the rail guides facing inward.

Installing the Server into the Rack

You should now have rails attached to both the chassis and the rack unit. The next step is to install the server into the rack. Do this by lining up the rear of the chassis rails with the front of the rack rails. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). See Figure 2-3.

When the server has been pushed completely into the rack, you should hear the locking tabs "click". Finish by inserting and tightening the thumbscrews that hold the front of the server to the rack.

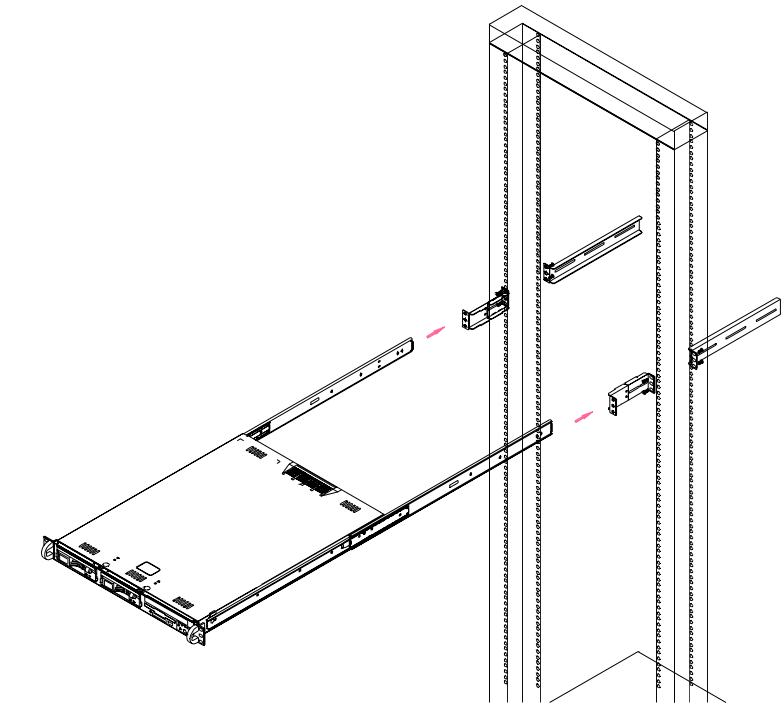
Figure 2-3. Installing the Server into a Rack



Installing the Server into a Telco Rack

If you are installing the SuperServer 5012B-6/5012B-E into a Telco type rack, follow the directions given on the previous pages for rack installation. The only difference in the installation procedure will be the positioning of the rack brackets to the rack. They should be spaced apart just enough to accomodate the width of the telco rack.

Figure 2-4. Installing the Server into a Telco Rack



2-5 Checking the Motherboard Setup

After you install the 5012B-6/5012B-E in the rack, you will need to open the unit to make sure the motherboard is properly installed and all the connections have been made.

1. **Accessing the inside of the 5012B-6/5012B-E (Figures 2-5a/2-5b)**
   First, release the retention screws that secure the unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, depress the two buttons on the top of the chassis to release the top cover. There is a large rectangular recess in the middle front of the top cover to help you push the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server.

2. **Check the CPU (processor)**
   You should have one processor already installed into the system board. Each processor should have its own heatsink attached. See Section 5-5 for instructions on processor installation.

3. **Check the system memory**
   Your 5012B-6/5012B-E server system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Section 5-5.

4. **Installing add-on cards**
   If desired, you can install an add-on card to the system. See Section 5-7 for details on installing a PCI add-on card.

5. **Check all cable connections and airflow**
   Make sure all power and data cables are properly connected and not blocking the airflow. See Section 5-3 for details on cable connections. Also, check the air seals for damage. The air seals are located under the blower fan and beneath the frame cross section that separates the drive bay area from the motherboard area of the chassis.
   Note: Make sure that the air seals are properly installed.

Figure 2-5a.
Accessing the Inside of the SuperServer 5012B-6
(with a SCSI drive removed)

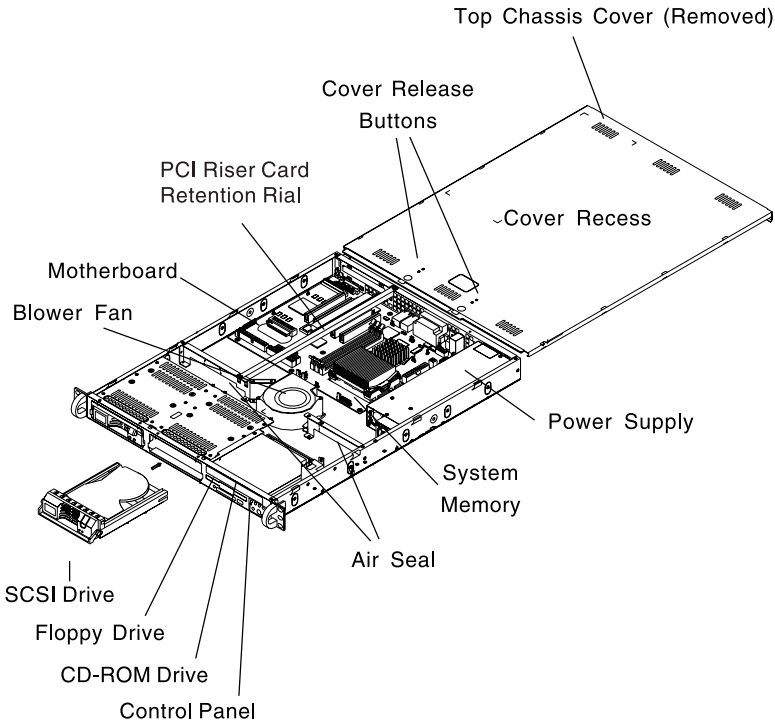
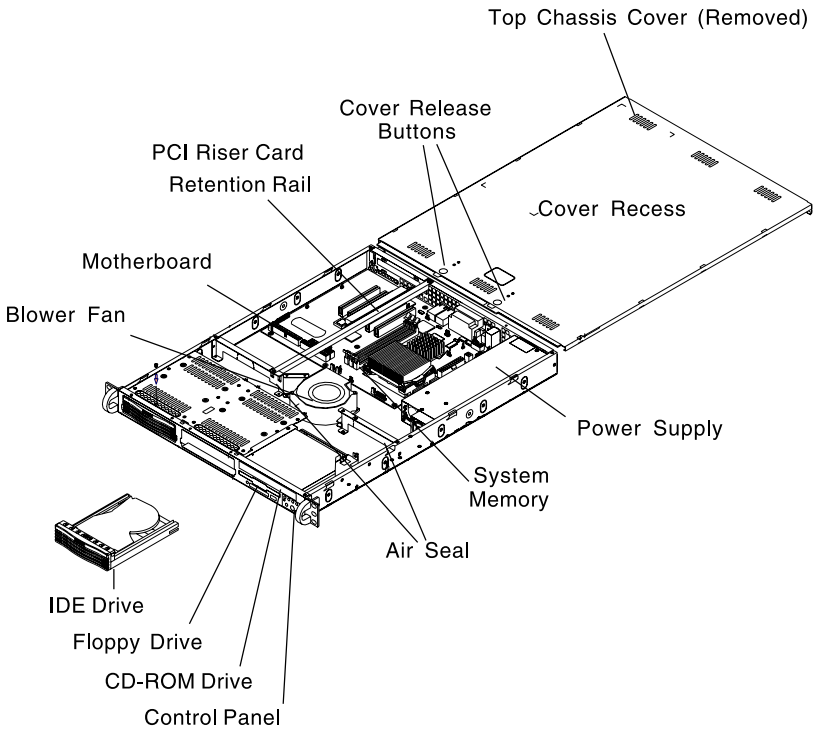


Figure 2-5b.
Accessing the Inside of the SuperServer 5012B-E
(with an IDE drive removed)



2-6 Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives and the SCSI drives and SCA backplane (5012B-6 only) or IDE drives (5012B-E only) have been properly installed and all connections have been made.

1. Accessing the drive bays

All drives can be accessed from the front of the server. For servicing the CD-ROM and floppy drives, you will need to remove the top chassis cover. The SCSI disk drives can be installed and removed from the front of the chassis without removing the top chassis cover.

2. Installing a CD-ROM and floppy disk drives

Refer to Section 6-4 if you need to reinstall a CD-ROM and/or floppy disk drive to the system.

3. Check the SCSI disk drives (5012B-6)

Depending upon your system's configuration, your system may have one or two SCSI drives already installed. If you need to install SCSI drives, please refer to Section 6-4.

4. Check the IDE disk drives (5012B-E)

Depending upon your system's configuration, your system may have one or two IDE hard drives already installed. If you need to install an IDE hard drive, please refer to Section 6-4.

5. Check the airflow

Airflow is provided by a 10-cm input fan and one (optional) 4-cm cooling fan. The system component layout was carefully designed to promote sufficient airflow through the small 1U rackmount space. Also note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans.

6. Supplying power to the system

The last thing you must do is to provide input power to the system. Plug the power cord from the power supply unit into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS).

Notes

Chapter 3
System Interface

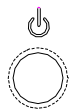
3-1 Overview

There are several LEDs on the control panel as well as others on the SCSI drive carriers and the motherboard to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also two buttons on the chassis control panel and an on/off switch on the power supply. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

3-2 Control Panel Buttons

There are two push-button buttons located on the front of the chassis. These are (in order from left to right) a reset button and a power on/off button.

- **RESET:** The reset switch reboots the system.



- **POWER:** This is the main power switch, which is used to apply or turn off the main system power. Turning off system power with this button removes the main power but keeps standby power supplied to the system. (See also the power supply on/off switch in Section 3-5.)

3-3 Control Panel LEDs

The control panel located on the front of the SC810 chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

- **OVERHEAT:** Indicates an overheat condition in the chassis. This may be caused by cables obstructing the airflow in the system, or the ambient room temperature being too warm. You should also check to make sure that the chassis cover is installed and that all fans are present and operating normally. Finally, check the air seals for damage. The air seals are located under the blower fan and beneath the frame cross section that separates the drive bay area from the motherboard area of the chassis.

NIC2

- **NIC2:** Indicates network activity on LAN2 when flashing.

NIC1

- **NIC1:** Indicates network activity on LAN1 when flashing.

- **HDD:** Indicates IDE channel activity. On the SuperServer 5012B-6/5012B-E, this light indicates CD-ROM drive activity when flashing.

- **Power:** Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

3-4 SCSI Drive Carrier LEDs (5012B-6 only)

Each SCSI drive carrier has two LEDs.

- **Green:** When illuminated, the green LED on the front of the SCSI drive carrier indicates drive activity. A connection to the SCSI SCA backplane enables this LED to blink on and off when that particular drive is being accessed.

- **Red:** A SAF-TE compliant backplane is needed to activate the red LED to indicate a drive failure. (A SAF-TE compliant SCSI backplane is optional on the 5012B-6.) If one of the SCSI drives fail, you should be notified by your system management software. Please refer to Section 6-4 for instructions on replacing failed SCSI drives.

3-5 Power Supply Switch

An on/off switch is located on the back of the power supply. This switch should normally be on at all times. Turning this switch to the off position removes both the main and standby power from the system, as opposed to the power button located on the control panel on the front of the chassis.

3-6 Motherboard LEDs

- **PW (Power_On) LED**

There is one PW (Power_on) LED on the motherboard. When illuminated, it indicates that system power is present on the motherboard. This LED is located in the corner of the P4SBR/P4SBE near the DIMM2 slot.

- **DA1 (SCSI LED) Indicator (5012B-6 only)**

There is one SCSI LED Indicator (DA1) on the motherboard. When illuminated, it indicates that SCSI is active. This SCSI LED (DA1) is located near Ultra III LVD Channel A (JA1) on the P4SBR mainboard.

Chapter 4
System Safety

4-1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SuperServer 5012B-6/5012B-E from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

- Do not work alone when working with high voltage components.

- Power should always be disconnected from the system when removing or installing main system components, such as the motherboard, memory modules and SCSI/IDE/floppy drives. When disconnecting power, you should first power down the system with the operating system first and then unplug the power cords of all the power supply units in the system.

- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.

- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

- Do not use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets.

- Motherboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarites (see Figure 4-1). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

- CD-ROM Laser: **CAUTION** - this server may have come equipped with a CD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

4-2 General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the SuperServer 5012B-6/5012B-E clean and free of clutter.

- The SuperServer 5012B-6/5012B-E weighs approximately 26 lbs (11.8 kg) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.

- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

4-3 ESD Precautions

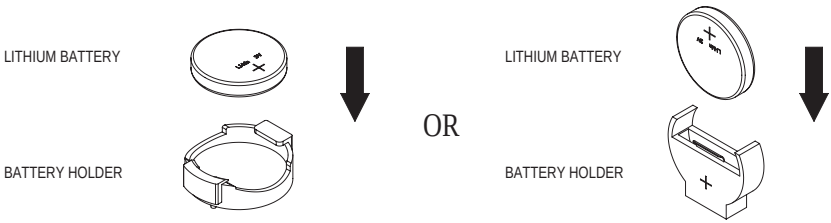
Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

4-4 Operating Precautions

Care must be taken to assure that the chassis cover is in place when the 5012B-6/5012B-E is operating to assure proper cooling. Out of warranty damage to the 5012B-6/5012B-E system can occur if this practice is not strictly followed.

Figure 4-1. Installing the Onboard Battery



Chapter 5
Advanced Motherboard Setup

This chapter covers the steps required to install the P4SBR/P4SBE motherboard into the SC810 chassis, connect the data and power cables and install add-on cards. All motherboard jumpers and connections are also described. A layout and quick reference chart are included in this chaptor for your reference. Remember to completely close the chassis when you have finished working with the motherboard to better cool and protect the system.

Tools Required

The only tools you will need to install the P4SBR/P4SBE into the chassis are a long and a short Philips screwdriver.

5-1 Handling the P4SBR/P4SBE Motherboard

Electric-static discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). Also note that the size and weight of the P4SBR/P4SBE motherboard may cause it to bend if handled improperly, which may result in damage. To prevent the P4SBR/P4SBE motherboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

Precautions

- Use a grounded wrist strap designed to prevent Electric Static Discharge (ESD).
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their anti-

static bags when not in use.

- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

The motherboard is shipped in antistatic packaging to avoid electrical static discharge. When unpacking the board, make sure the person handling it is static protected.

5-2 Motherboard Installation

This section explains the first step of physically mounting the P4SBR (5012B-6) or P4SBE (5012B-E) into the SC810 chassis. Following the steps in the order given will eliminate the most common problems encountered in such an installation. To remove the motherboard, follow the procedure in reverse order.

1. **Accessing the inside of the 5012B-6/5012B-E (see Figure 2-5)** Two release buttons are located on the top cover of the chassis. Depressing both of these buttons while pushing the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server. (If already installed in a rack, you must first release the retention screws that secure the unit to the rack. Then grasp the two handles on either side and pull the unit straight out until the rails lock into place.)

2. **Check compatibility of motherboard ports and I/O shield:** The P4SBR/P4SBE requires a chassis big enough to support a 12" x 8.7" motherboard, such as Supermicro's SC810 1U rackmount. Make sure that the I/O ports on the motherboard align properly with their respective holes in the I/O shield at the back of the chassis.

3. **Mounting the motherboard onto the motherboard tray:** Carefully mount the motherboard to the motherboard tray by aligning the board holes with the raised metal standoffs that are visible on the bottom of the chassis. Insert screws into all the mounting holes on your motherboard that line up with the standoffs and tighten until snug (if you screw them in too tight, you might strip the threads). Metal screws provide an electrical contact to the motherboard ground to provide a continuous ground for the system.

5-3 Connecting Cables

Now that the motherboard is installed, the next step is to connect the cables to the board. These include the data (ribbon) cables for the peripherals and control panel and the power cables.

Connecting Data Cables

The ribbon cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). The following data cables (with their locations noted) should be connected. (See the layout on page 5-10 for connector locations.)

- IDE Device Cables (J18 and J19)
- Floppy Drive Cable (J26)
- SCSI Device Cables (JA1, JA2, JA3) (5012H only)
- Control Panel Cable (JF1, see next page)

Connecting Power Cables

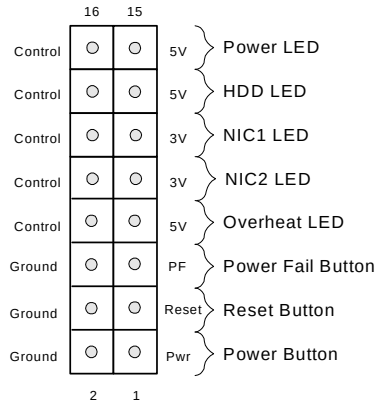
The P4SBR/P4SBE has a 20-pin primary power supply connector designated "ATX Power" for connection to the ATX power supply. See Section 5-8 for power connector pin definitions.

Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators.

All JF1 wires have been bundled into a single ribbon cable to simplify this connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to JP4 of the Control Panel PCB board, located just behind the system status LEDs on the chassis. The control signals are all on the even numbered pins. See Section 5-8 for details and pin descriptions.

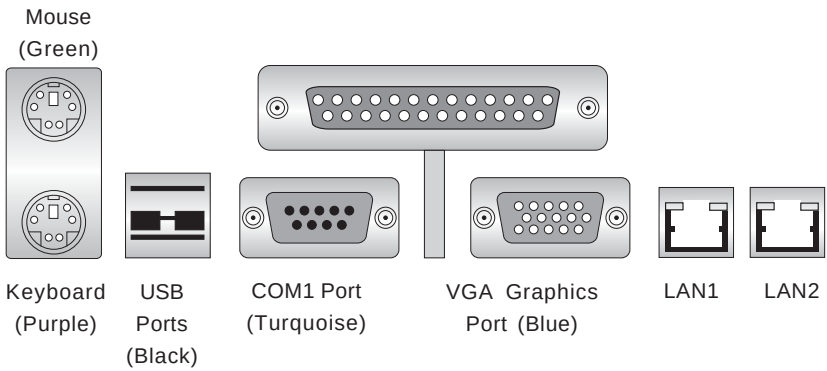
Figure 5-1. Control Panel Header Pins



5-4 I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-2 below for the colors and locations of the various I/O ports.

Figure 5-2. I/O Ports



Note: The COM2 port is a header on the motherboard, located behind the USB ports.

5-5 Installing Processors

Avoid placing direct pressure to the top of the processor package. Always connect the power cord last and always remove it before adding, removing or changing any hardware components.

1. Installing a Pentium 4 processor

The P4SBR/P4SBE has one 478-pin microPGA socket, which supports Intel Pentium 4 processors. Lift the lever on the CPU socket and insert the processor keeping the notched corner oriented toward pin one on the socket. Make sure the processor is fully seated in the socket and and then close the lever. (See Figure 5-3 for views of a 478-pin microPGA socket before and after processor installation.)

2. Attaching heatsinks to the processors

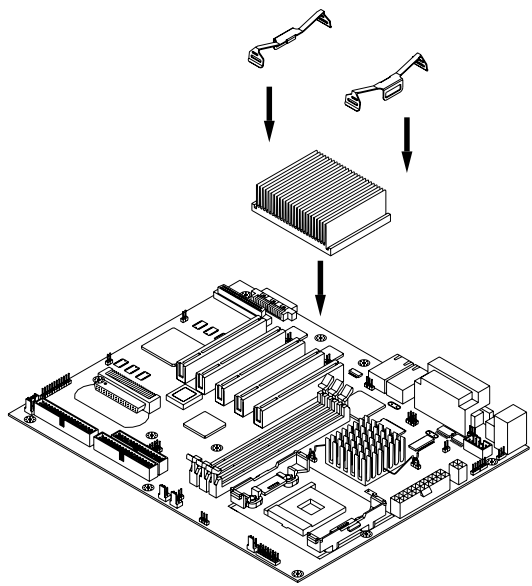
One passive heatsink has been included with your SuperServer 5012B-6/ 5012B-E. Secure the heatsink to the processor with a suitable thermal compound to best conduct the heat from the processor to the heatsink. Make sure that you apply the compound evenly on the CPU die and that good contact is made between the CPU chip (the die) and the heatsink. Insufficient contact, inproper types of heatsink or inproper amount of thermal compound can cause the processor to overheat, which may crash the system**.** (Refer to Figure 5-4.)

3. Removing the processors:

To remove the processor from the motherboard, simply follow the installation process in reverse order.

Figure 5-3. 478-pin Socket: Empty and with Processor Installed

Figure 5-4. Heatsink Installation



5-6 Installing Memory

CAUTION! Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

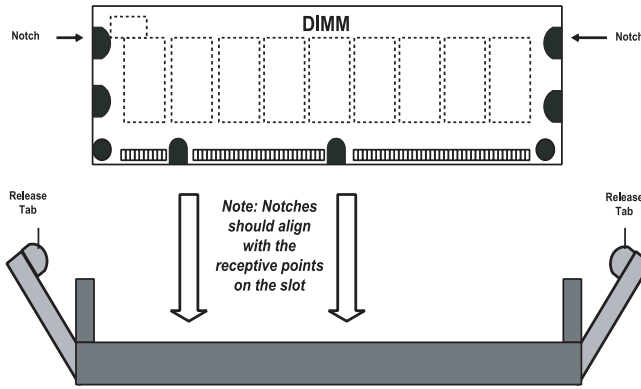
1. Memory support

The P4SBR/P4SBE has three PC 133 SDRAM sockets that support up to 3 GB of low profile, PC133/PC100 unbuffered SDRAM. ECC type memory is supported. PC133 and PC100 memory are both fully supported at their respective speeds.

2. Installing memory modules

Insert each memory module vertically into a DIMM slot. Pay attention to the two notches along the bottom of the module to prevent inserting the module incorrectly. Gently press down on the DIMM module until it snaps into place in the slot (see Figure 5-5).

Figure 5-5. Side View of DIMM Installation into Slot



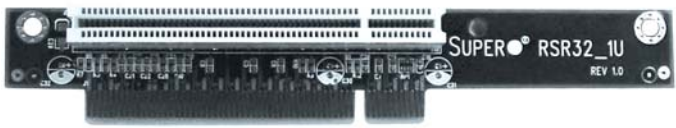
To Install: Insert module vertically and press down until it snaps into place. Pay attention to the bottom notches.
To Remove: Use your thumbs to gently push each release tab outward to free the DIMM from the slot.

5-7 Adding PCI Cards

1. 32-bit PCI slot

The P4SBR/P4SBE has five 32-bit, 33 MHz 5V PCI slots available. A riser card designed specifically for use in a 1U rackmount chassis is included with your system. This riser card allows an installed PCI card to sit at a 90 degree angle so it can fit inside the chassis. This riser card accommodates 32-bit, 33 MHz 5V PCI cards. Figure 5-6 shows the riser card.

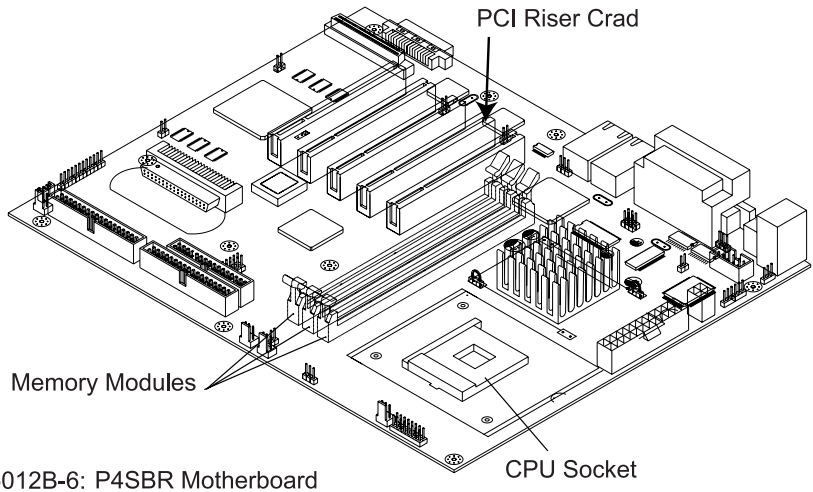
Figure 5-6. 32-bit, 33 MHz 5V Riser Card



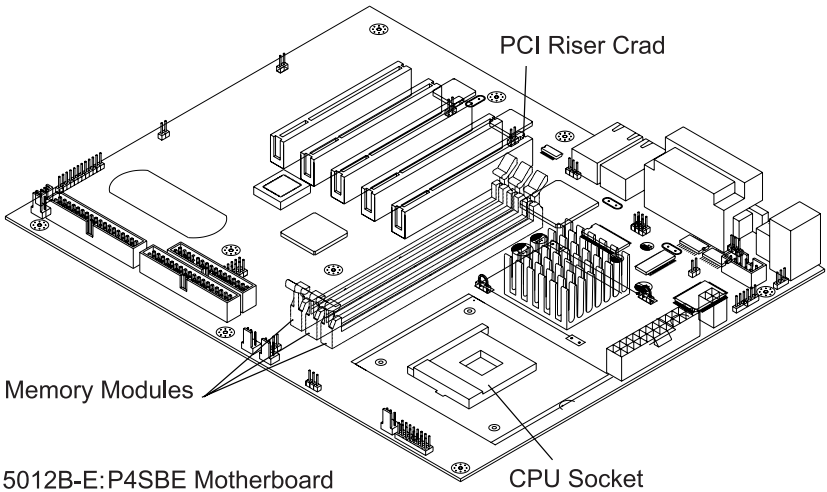
2. PCI card installation

Before installing a PCI add-on card, locate the PCI riser card mentioned in Step 1. Begin by removing the I/O shield for the PCI slot you wish to populate. Fully seat the PCI card into the riser card and screw it into the metal retention rail (shown in Figure 2-5). Then, insert the riser card into the PCI slot on the motherboard, pushing down with your thumbs evenly on both sides of the card. (See Figure 5-7 for location.) Finish by using a screw to secure the top of the card shield to the chassis. The I/O shield protects the motherboard and its components from EMI and aid in proper ventilation, so make sure there is always a shield covering each PCI slot.

Figure 5-7. Adding PCI Cards



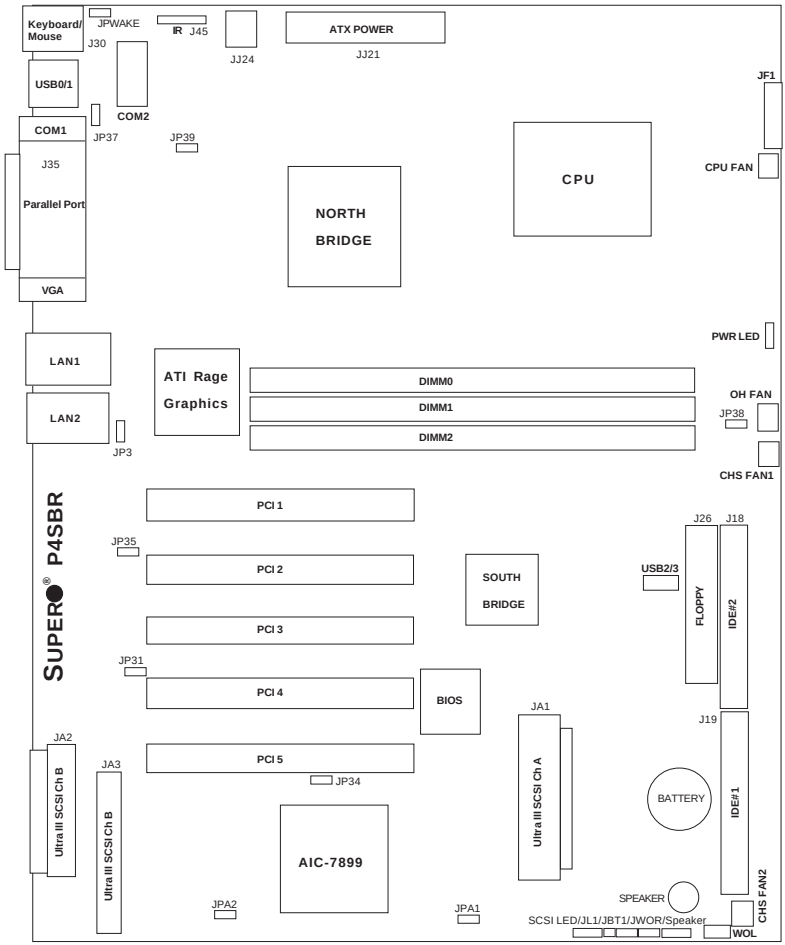
5012B-6: P4SBR Motherboard



5012B-E:P4SBE Motherboard

Figure 5-8. Super P4SBR Layout

(not drawn to scale)



See chapter 2 for detailed information on jumpers, I/O ports and the JF1 Front Panel Connectors. Jumpers not indicated are for test purposes only.

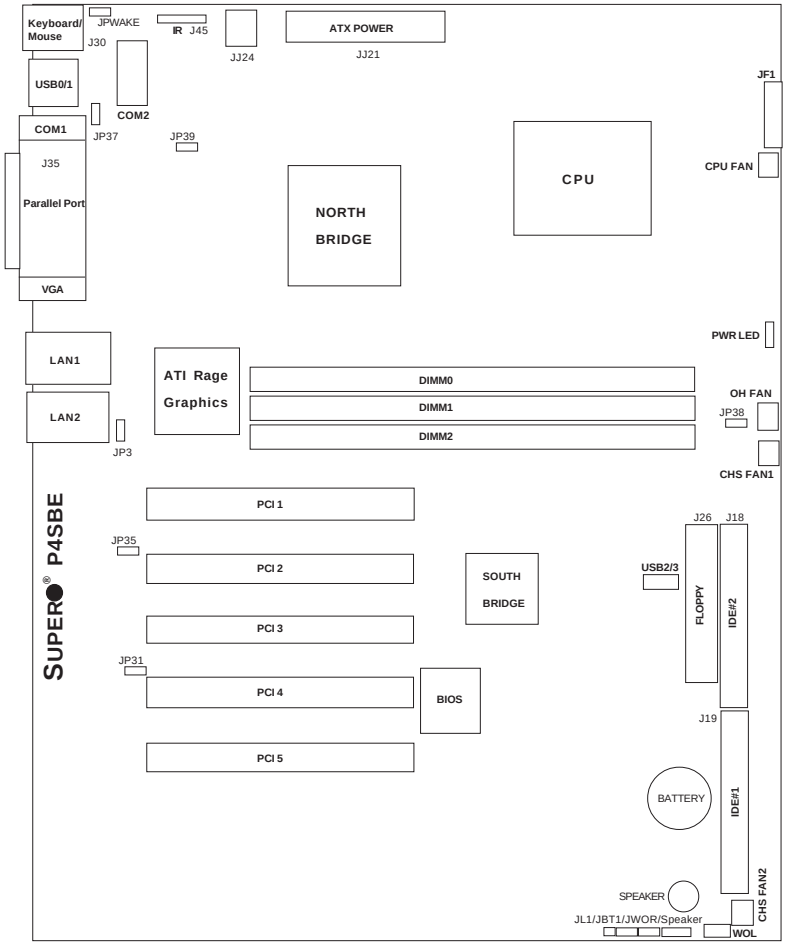
P4SBR Quick Reference

Jumpers	Description	Default Setting
JBT1	CMOS Clear	Pins 1-2 (Normal)
JPA1	LVD SCSI Ch A Term	Open (Enabled)
JPA2	LVD SCSI Ch B Term	Open (Enabled)
JP3	VGA Enable/Disable	Pins 1-2 (Enabled)
JP31	LAN2 Enable/Disable	Closed (Enabled)
JP34	SCSI Enable/Disable	Pins 1-2 (Enabled)
JP35	LAN1 Enable/Disable	Closed (Enabled)
JP37	USB Wakeup	Pins 1-2 (Disabled)
JP38	OH Fan On/Standby	Open (Standby)
JP39	Watch Dog En/Disable	Open (Disabled)
JPWAKE	Keyboard Wake-Up	Pins 1-2 (Disabled)

Connectors	Description
COM1/COM2	COM1/COM2 Serial Port Connector
CHS Fan 1/2	Chassis Fan Headers
CPU FAN	CPU Fan Header
DIMM0/1/2	Memory (DIMM) Slots
JA1	Ultra III LVD SCSI Channel A
JA2	Ultra III LVD SCSI Channel B
JA3	Ultra III LVD SCSI Channel B
JF1	Front Control Panel
JJ21	ATX 12V Power Connector (20-pin)
JJ24	ATX 12V Power Connector (4-pin)
JL1	Chassis Intrusion Header
JP26	Floppy Disk Drive Connector
JWOR	Wake-On-Ring Header
J18, J19	IDE Hard Disk Drive Connectors
J30	PS/2 Keyboard/Mouse
J35	Parallel Printer Port
J45	Infrared Device Header
OH Fan	Thermal Control (Overheat) Fan Header
PWR LED	Power LED Header
SCSI LED	SCSI Activity LED Indicator
Speaker	External Speaker Header
USB0/1	Universal Serial Bus Ports #0 / #1
USB2/3	Universal Serial Bus Port #2 / #3
WOL	Wake-On-LAN

Note: The 4-pin connector at JJ24 must be connected to meet the safety requirements of the ATX 12V specifications.

Figure 5-9. Super P4SBE Layout



See chapter 2 for detailed information on jumpers, I/O ports and the JF1 Front Panel Connectors. Jumpers not indicated are for test purposes only.

P4SBE Quick Reference

Jumpers	Description	Default Setting
JBT1	CMOS Clear	Pins 1-2 (Normal)
JP3	VGA Enable/Disable	Pins 1-2 (Enabled)
JP31	LAN2 Enable/Disable	Closed (Enabled)
JP35	LAN1 Enable/Disable	Closed (Enabled)
JP37	USB Wakeup	Pins 1-2 (Disabled)
JP38	OH Fan On/Standby	Open (Standby)
JP39	Watch Dog En/Disable	Open (Disabled)
JPWAKE	Keyboard Wake-Up	Pins 1-2 (Disabled)

Connectors	Description
COM1/COM2	COM1/COM2 Serial Port Connector
CHS Fan 1/2	Chassis Fan Headers
CPU FAN	CPU Fan Header
DIMM0/1/2	Memory (DIMM) Slots
JF1	Front Control Panel
JJ21	ATX 12V Power Connector (20-pin)
JJ24	ATX 12V Power Connector (4-pin)
JL1	Chassis Intrusion Header
JP26	Floppy Disk Drive Connector
JWOR	Wake-On-Ring Header
J18, J19	IDE Hard Disk Drive Connectors
J30	PS/2 Keyboard/Mouse
J35	Parallel Printer Port
J45	Infrared Device Header
OH Fan	Thermal Control (Overheat) Fan Header
PWR LED	Power LED Header
Speaker	External Speaker Header
USB0/1	Universal Serial Bus Ports #0 / #1
USB2/3	Universal Serial Bus Port #2 / #3
WOL	Wake-On-LAN

Note: The 4-pin connector at JJ24 must be connected to meet the safety requirements of the ATX 12V specifications.

5-8 Connector Definitions

Power Supply Connector

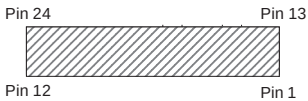
The primary power supply connector on the P4SBR/P4SBE meets the SSI (Superset ATX) 24-pin specifications; however, it also supports an ATX 20-pin connector. Thus, both 20-pin ATX and 24-pin SSI connectors can be used as long as it is correctly oriented. (Make sure that pin 1 of the PS connector is seated on pin 1 of the JJ21 header.) See the tables on the right for the pin definitions of both types. Refer to Figure A below for a 24-pin connector orientation and Figure B for a 20-pin connector orientation. Also see the table below right for JJ24 (12V connector) pin definitions.

ATX Power Supply 24-pin Connector Pin Definitions (JJ21)

Pin Number	Definition	Pin Number	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON#	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res(NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

ATX Power Supply 20-pin Connector

Pin Number	Definitio	Pin #	Definition
11	+3.3V	1	+3.3V
12	-12V	2	+3.3V
13	COM	3	COM
14	PS_ON	4	+5V
15	COM	5	COM
16	COM	6	+5V
17	COM	7	COM
18	-5V	8	PW-OK
19	+5V	9	5VSB
20	+5V	10	+12V

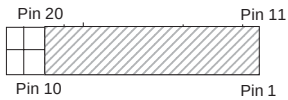


(Figure A: 24-pin connection)

required connection

ATX Power Supply 4-pin Connector (JJ24)

Pins #	Definition
1 & 2	Ground
3 & 4	+12 V



(Figure B: 20-pin connection)

PWR Supply Color Definitions

Color	Definition
Orange	+3.3V
Black	Com
Red	5V
White	Power OK
Yellow	+12V
Purple	5V standby
Brown	-5V

(For reference only)

Power Button

The Power Button connector is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. The user can also configure this button to function as a suspend button. (See the Power Button Mode setting in BIOS.) To turn off the power when set to suspend mode, hold down the power button for at least 4 seconds. See the table on the right for pin definitions.

Power Button Pin Definitions (JF1)

Pin Number	Definition
1	PW_ON
2	Ground

Reset Button

The Reset Button is located on pins 3 and 4 of JF1. This connector attaches to the hardware reset switch on the computer case. See the table on the right for pin definitions.

Reset Pin Definitions (JF1)

Pin Number	Definition
3	Ground
4	Reset

Power Fail Button

The Power Fail Button connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

Power Fail Button Pin Definitions (JF1)

Pin Number	Definition
5	Control
6	GND

Overheat LED (OH)

Connect an LED to the OH connection on pins 7 and 8 of JF1 to provide advanced warning of chassis overheating. Refer to the table on the right for pin definitions.

Overheat (OH) LED Pin Definitions (JF1)

Pin Number	Definition
7	+5V
8	GND

NIC2 LED

The NIC2 (Network Interface Controller) LED connection is located on pins 9 and 10 of JF1. Attach the NIC2 LED cable to display network activity. Refer to the table on the right for pin definitions.

NIC2 LED Pin Definitions (JF1)

Pin Number	Definition
9	+5V
10	GND

NIC1 LED

The NIC1 (Network Interface Controller) LED connection is located on pins 11 and 12 of JF1. Attach the NIC1 LED cable to display network activity. Refer to the table on the right for pin definitions.

NIC1 LED Pin Definitions (JF1)

Pin Number	Definition
11	+5V
12	GND

HDD LED

The HDD LED (for IDE Hard Disk Drives) connection is located on pins 13 and 14 of JF1. Attach the IDE hard drive LED cable to these pins to display disk activity. Refer to the table on the right for pin definitions.

(IDE) HDD LED Pin Definitions (JF1)

Pin Number	Definition
13	+5V
14	HD Active

Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

PWR_LED Pin Definitions (JF1)

Pin Number	Definition
15	+5V
16	Control

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located on J30. Refer to the table on the right for pin definitions. (The mouse port is above the keyboard port. See Figure 2-3 for locations.)

PS/2 Keyboard and Mouse Port Pin Definitions (J30)

Pin Number	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

Universal Serial Bus (USB)

Two Universal Serial Bus ports (USB0 and USB1) are located on the I/O backplane. Refer to the table on the right for pin definitions.

Universal Serial Bus Pin Definitions

USB0		USB1	
Pin Number	Definition	Pin Number	Definition
1	+5V	1	+5V
2	P0-	2	P0-
3	P0+	3	P0+
4	Ground	4	Ground
5	N/A	5	Key

Extra Universal Serial Bus Connection (USB2/3)

The P4SBR/P4SBE also provides two additional USB headers; USB2 and USB3 are headers located near the floppy connnection and provide easy front side chassis access (cables are not included). Refer to the table on the right for pin definitions.

USB2 Pin Definitions (J43)

Pin Number	Definition
1	Power
2	-
3	+
4	Ground

USB3 Pin Definitions (J51)

Pin Number	Definition
1	Power
2	-
3	+
4	Ground

Serial Ports

The COM1 serial port is located under the parallel port (see Figure 2-3). See the table on the right for pin definitions. The COM2 connector is a header located behind the USB ports.

(Note: NC indicates no connection.)

Serial Port Pin Definitions (COM1, COM2)

Pin Number	Definition	Pin Number	Definition
1	DCD	6	CTS
2	DSR	7	DTR
3	Serial In	8	RI
4	RTS	9	Ground
5	Serial Out	10	NC

LAN1/LAN2 Ports

Two Ethernet ports (designated LAN1 and LAN2) are located beside the VGA port on the I/O backplane. These ports accept RJ45 type cables. Two LEDs on each indicate a successful connection (yellow) and activity (green).

RJ45 Ethernet Port

Infrared Connector

The infrared connector is located at J45. See the table on the right for pin definitions. Refer to the Technical Support section of our web page for information on the infrared devices you can connect to the system.

Infrared Pin Definitions (J45)

Pin Number	Definition
1	+5V
2	Key
3	IRRX
4	Ground
5	IRTX

Fan Headers

The motherboard has CPU, chassis and overheat fan headers designated CPU, CHS F1, CHS FAN2 and OH FAN, respectively. See the table on the right for pin definitions.

Fan Header Pin Definitions (CPU/CHS/OH Fans)

Pin Number	Definition
1	Ground (black)
2	+12V (red)
3	Tachometer

Caution: These fan headers are DC power.

Wake-On-LAN

The Wake-On-LAN header is designated as "WOL". Refer to the table on the right for pin definitions. You must enable the LAN Wake-Up setting in BIOS to use this function. (You must also have a LAN card with a Wake-on-LAN connector and cable to use this feature.)

Wake-On-LAN Pin Definitions (WOL)

Pin Number	Definition
1	+5V Standby
2	Ground
3	Wake-up

SCSI LED Indicator (P4SBR only)

The SCSI LED connector is used to provide an LED indication of SCSI activity. See the table on the right for pin definitions.

SCSI LED Pin Definitions (SCSI LED)

Pin Number	Definition
1	Positive
2	Negative
3	Negative
4	Positive

PWR LED

Attach an LED to the Power LED connection to be informed that power is being supplied to the motherboard. Refer to the table on the right for pin definitions.

Power LED Pin Definitions (PWR LED)

Pin Number	Definition
1	+5V
2	Control
3	Control

Wake-On-Ring

The Wake-On-Ring header is designated as "JWOR". This function allows your computer to receive and be "awakened" by an incoming call when in the suspend state. See the table on the right for pin definitions. You must also have a WOR card and cable to use WOR.

Wake-On-Ring Pin Definitions (JWOR)

Pin Number	Definition
1	Ground
2	Wake-up

Chassis Intrusion

The Chassis Intrusion header is located on JL1. See the table on the right for pin definitions.

Chassis Intrusion Pin Definitions (JL1)

Pin Number	Definition
1	Intrusion Input
2	Ground

Speaker

A header for an external speaker is located near JWOR. If using the onboard speaker, pins 1 and 2 should be closed with a jumper. If you wish to use an external speaker, you may connect it to this header. See the table on the right for pin definitions.

Speaker Connector Pin Definitions (Speaker)

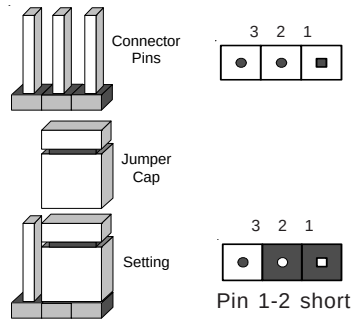
Pin Number	Function	Definition
1	+	Red wire, Speaker data
2	Key	No connection
3		Key
4		Speaker data

5-9 Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.

Note: on 2-pin jumpers, "Closed" means the jumper is on both pins and "Open" means the jumper is either on one pin only or completely off.



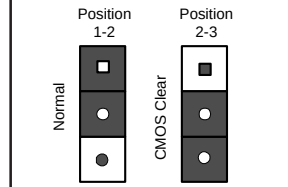
CMOS Clear

JBT1 is used to clear CMOS (which will also clear any passwords). Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS. To clear CMOS,

1) First power down the system and unplug the power cord(s).
2) With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.
3) Remove the screwdriver (or shorting device).
4) Reconnect the power cord(s) and power on the system.

CMOS Clear Jumper Settings (JBT1)

Jumper Position	Definition
1-2	Normal
2-3	CMOS Clear



USB Wake-Up

Jumper JP37 is used in conjunction with the Keyboard Wake-Up function in BIOS to wake the system up with a USB keyboard that has been connected to a USB port (not header). Set JP37 to pins 1-2 to support USB keyboard wake-up and resume from ACPI S1 mode and pins 2-3 pins to support USB keyboard wake-up and resume from ACPI S3 mode. See the table on the right for jumper settings.

Note: Your power supply must provide 5v of standby voltage with at least 1A to use this feature.

USB Wake-Up
Jumper Settings (JP37)

Jumper Position	Definition
1-2	5v
2-3	5v Standby

SCSI Termination (P4SBR only)

The SCSI termination jumpers allow you to enable or disable termination for the onboard SCSI connectors. The normal (default) position is open to enable SCSI termination. See the table on the right for jumper settings.

SCSI Termination
Jumper Settings
(JPA1, JPA2)

Jumper Position	Definition
Open	Enabled
Closed	Disabled

SCSI Enable/Disable (P4SBR only)

Use jumper JP34 to enable or disable the onboard SCSI on your motherboard. See the table on the right for jumper settings.

SCSI Enable/Disable
Jumper Settings (JP34)

Jumper Position	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

LAN1/LAN2

Use jumper JP35/JP31 to enable or disable LAN 1/LAN 2, respectively. See the table on the right for jumper settings.

LAN1/2 Enable/Disable
Jumper Settings
(J35, J31)

Jumper Position	Definition
Open	Disabled
Closed	Enabled

Overheat Fan Enable/Disable

JP38 allows you to enable or disable the overheat (thermal) fan. When enabled, the fan will operate continuously. When disabled, it will operate only when a predefined temperature threshold has been exceeded. See the table on the right for jumper settings.

Thermal Fan Enable/Disable Jumper Settings (JP38)

Jumper Position	Definition
Open	Disabled
Closed	Enabled

Watchdog Enable/Disable

Jumper JP39 allows you to enable or disable the Watchdog feature. The normal (default) position is closed to disable the watchdog timer and enable the speaker. See the table on the right for jumper settings.

Watchdog Enable/Disable Jumper Settings (JP39)

Jumper Position	Definition
Open	Disabled
Closed	Enabled

Keyboard Wake-Up

The JPWAKE jumper is used together with the Keyboard Wake-Up function in BIOS. Enable both the jumper and the BIOS setting to allow the system to be woken up by depressing a key on the keyboard. See the table on the right for jumper settings.

Note: Your power supply must meet ATX specification 2.01 or higher and supply 720mA of standby power to use this feature.

Keyboard Wake-Up Jumper Settings (JPWAKE)

Jumper Position	Definition
1-2	Disabled
2-3	Enabled

5-10 Parallel Port/Floppy/Hard Disk and SCSI Connections

Be aware of the following when connecting the floppy and hard disk drive cables:

- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with the twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

Parallel Port Connector

The parallel port is located on J35. See the table below for pin definitions.

Parallel (Printer) Port Pin Definitions (J35)

Pin Number	Function	Pin Number	Function
1	Strobe-	2	Auto Feed-
3	Data Bit 0	4	Error-
5	Data Bit 1	6	Init-
7	Data Bit 2	8	SLCT IN-
9	Data Bit 3	10	GND
11	Data Bit 4	12	GND
13	Data Bit 5	14	GND
15	Data Bit 6	16	GND
17	Data Bit 7	18	GND
19	ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	NC

Floppy Connector

The floppy connector is located on JP26. See the table on the right for pin definitions.

Floppy Connector Pin Definitions (JP26)

Pin Number	Function	Pin Number	Function
1	GND	2	FDHDIN
3	GND	4	Reserved
5	Key	6	FDEDIN
7	GND	8	Index-
9	GND	10	Motor Enable
11	GND	12	Drive Select B-
13	GND	14	Drive Select A-
15	GND	16	Motor Enable
17	GND	18	DIR-
19	GND	20	STEP-
21	GND	22	Write Data-
23	GND	24	Write Gate-
25	GND	26	Track 00-
27	GND	28	Write Protect-
29	GND	30	Read Data-
31	GND	32	Side 1 Select-
33	GND	34	Diskette

IDE Connectors

There are no jumpers to configure the onboard IDE interfaces J18 and J19. See the table on the right for pin definitions. You must use the ATA100/66 cable included with your system to benefit from the ATA100/66 technology.

IDE Connector Pin Definitions (J18, J19)

Pin Number	Function	Pin Number	Function
1	Reset IDE	2	GND
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	GND	20	Key
21	DRQ3	22	GND
23	I/O Write-	24	GND
25	I/O Read-	26	GND
27	IOCHRDY	28	BALE
29	DACK3-	30	GND
31	IRQ14	32	IOCS16-
33	Addr 1	34	GND
35	Addr 0	36	Addr 2
37	Chip Select 0	38	Chip Select 1-
39	Activity	40	GND

Ultra160 SCSI Connectors

Refer to the table below for the pin definitions of the Ultra160 SCSI connectors located at JA1, JA2 and JA3.

68-pin Ultra160 SCSI Connectors (JA1, JA2, JA3)

Connector Contact Number	Signal Names	Connector Contact Number	Signal Names
1	+DB(12)	35	-DB(12)
2	+DB(13)	36	-DB(13)
3	+DB(14)	37	-DB(14)
4	+DB(15)	38	-DB(15)
5	+DB(P1)	39	-DB(P1)
6	+DB(0)	40	-DB(0)
7	+DB(1)	41	-DB(1)
8	+DB(2)	42	-DB(2)
9	+DB(3)	43	-DB(3)
10	+DB(4)	44	-DB(4)
11	+DB(5)	45	-DB(5)
12	+DB(6)	46	-DB(6)
13	+DB(7)	47	-DB(7)
14	+DB(P)	48	-DB(P)
15	GROUND	49	GROUND
16	DIFFSENS	50	GROUND
17	TERMPWR	51	TERMPWR
18	TERMPWR	52	TERMPWR
19	RESERVED	53	RESERVED
20	GROUND	54	GROUND
21	+ATN	55	-ATN
22	GROUND	56	GROUND
23	+BSY	57	-BSY
24	+ACK	58	-ACK
25	+RST	59	-RST
26	+MSG	60	-MSG
27	+SEL	61	-SEL
28	+C/D	62	-C/D
29	+REQ	63	-REQ
30	+I/O	64	-I/O
31	+DB(8)	65	-DB(8)
32	+DB(9)	66	-DB(9)
33	+DB(10)	67	-DB(10)
34	+DB(11)	68	-DB(11)

Notes

Chapter 6
Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC810 chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

Tools Required

The only tool you will need to install components and perform maintainance is a Philips screwdriver.

6-1 Static-Sensitive Devices

Electric Static Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD discharge.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

Figure 6-1. Chassis Front View

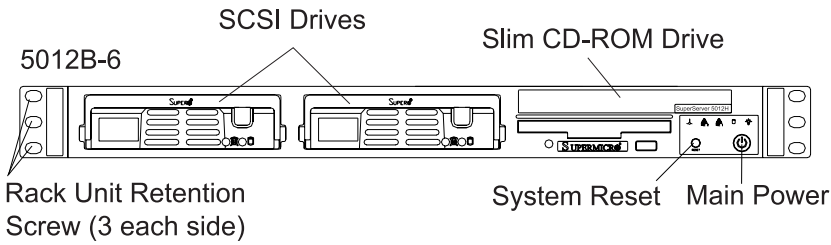
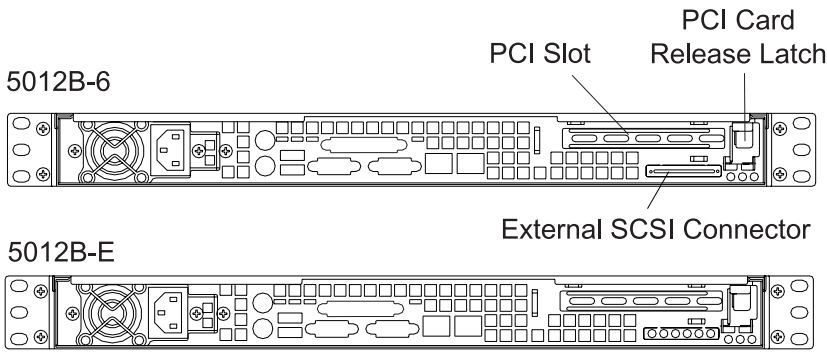


Figure 6-2. Chassis Rear View



6-2 Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the motherboard to provide you with system control buttons and status indicators. These wires have been bundled together in a ribbon cable to simplify the connection. Connect the cable from JF1 on the motherboard to JP4 on the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both JF1 and JP4. Pull all excess

cabling out of the airflow path. The LEDs inform you of system status. See Chapter 3 for details on the LEDs and the control panel buttons. Details on JF1 can be found in Chapter 5.

6-3 System Fans

One 10-cm blower fan provides all the cooling needed for the SuperServer 5012B-6/5012B-E. The chassis includes air seals under the blower fan and at the chassis cross section, which separates the drive bay area from the motherboard area of the chassis to promote better airflow. It is highly important that the air seal is properly installed and making a good seal in order for the cooling air to circulate properly through the chassis. See Figure 6-3 for locations.

System Fan Failure

The blower fan runs at a full 100% rpm. If the fan fails, the ambient air temperature in the chassis will rise and activate the overheat LED on the control panel. You will need to power down the system to replace this fan.

Replacing System Cooling Fans

1. Removing the blower fan

After turning off the power to the system, first remove the chassis cover and unplug the fan cable from the motherboard. Lift the blower fan from the mounting posts and pull it completely out from the motherboard. See Figure 6-3.

2. Installing a new blower fan

Replace the failed fan with an identical 10-cm, 12 volt fan (available from Supermicro). Position the new fan in its proper place in the chassis by fitting the fan onto the fan mounting posts in the chassis. After the new fan has been installed, plug the fan cable back into the same chassis fan header on the motherboard you removed it from. Make sure the air seal under the fan is properly installed and creating a good seal. Power up the system and check that the fan is working properly and that the LED on the control panel has turned off. Finish by replacing the top panel of the chassis.

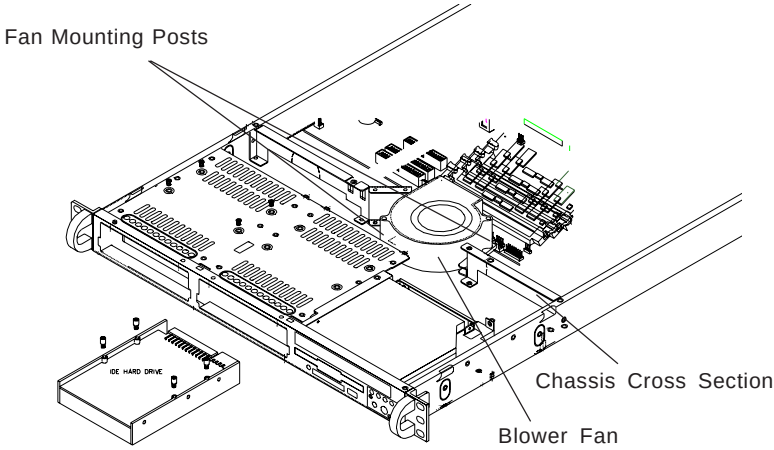


Figure 6-3. System Cooling Fans

6-4 Drive Bay Installation/Removal

Accessing the Drive Bays

SCSI Drives: You do not need to access the inside of the chassis to replace or swap SCSI drives. Proceed to the next step for instructions.
Note: You must use standard 1" high, 80-pin SCA SCSI drives in the SuperServer 5012B-6.

CD-ROM/IDE/Floppy Disk Drives: For installing/removing the CD-ROM, IDE or floppy disk drives, you will need to gain access to the inside of the 5012B-6/5012B-E by removing the top cover of the chassis. Proceed to the "CD-ROM and Floppy Drive Installation" section later in this chapter for instructions.
Note: Only a "slim" CD-ROM drive will fit in the 5012B-6/5012B-E. IDE hard drives are for the 5012B-E only.

SCSI Drive Installation (5012B-6 only)

1. Mounting a SCSI drive in a drive carrier

The SCSI drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the SCSI drive bays. For this reason, even empty carriers without SCSI drives installed must remain in the chassis. To add a new SCSI drive, install a drive into the carrier with the printed circuit board side toward the carrier so that the mounting holes align with those in the carrier. Secure the drive to the carrier with four screws, as shown in Figure 6-4.

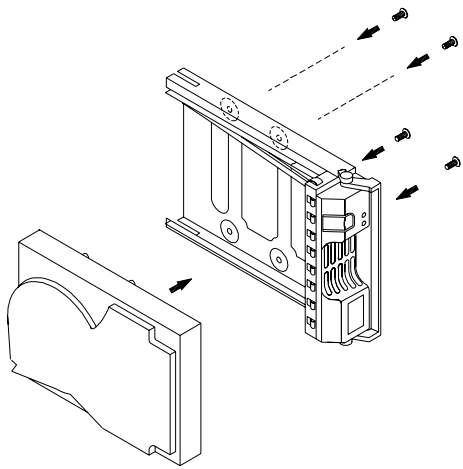


Figure 6-4. Mounting a SCSI Drive in a Carrier (5012B-6 only)

Use caution when working around the SCSI backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane or obstruct the holes, which aid in proper airflow.

<u>Important:</u> Regardless of how many SCSI hard drives are installed, both SCSI drive carriers must remain in the drive bays to maintain proper airflow.

2. Installing/removing hot-swap SCSI drives

Two SCSI drive bays are located in the front of the chassis, making them easily accessible for installation and removal. These SCSI drives are hot-swap units, meaning they can be installed and removed without powering down the system. To remove, first push the release button located beside the drive LEDs, then swing the colored handle fully out and use it to pull the unit straight out (see Figure 6-5).

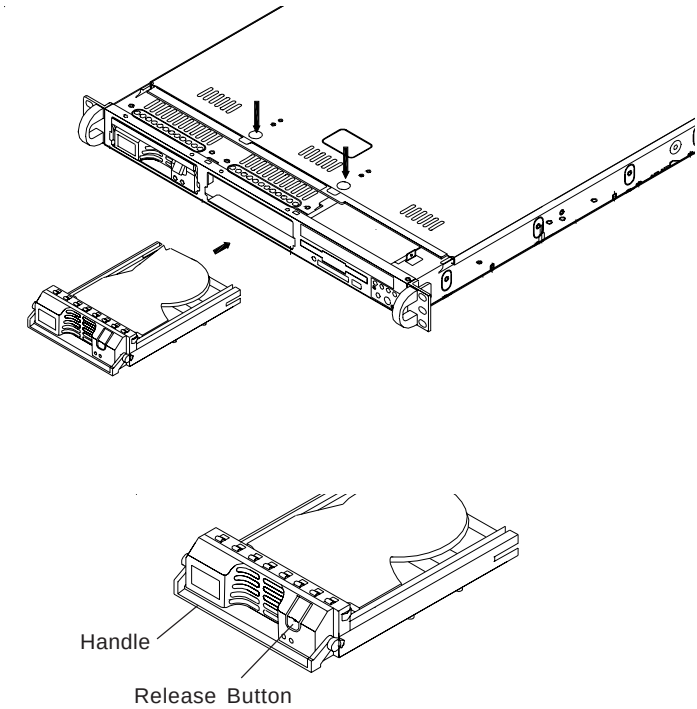


Figure 6-5. Removing SCSI Drives (5012B-6)

<u>Important:</u> Regardless of how many SCSI hard drives are installed, both SCSI drive carriers must remain in the drive bays to maintain proper airflow.

SCSI Power Cables

SCSI power cables should be routed so that they do not block the airflow through the chassis. There is a 4-pin connector for the power cables.

SCA Backplane

The SCSI drives plug into an SCA backplane that provides power, SCSI ID and bus termination. A RAID controller can be used with the SCA backplane to provide data security. The operating system you use must have RAID support to enable the hot-swap capability of the SCSI drives. The SCA SCSI backplane is already preconfigured, so there are no jumpers or switches present on it.

IDE Drive Installation (5012B-E only)

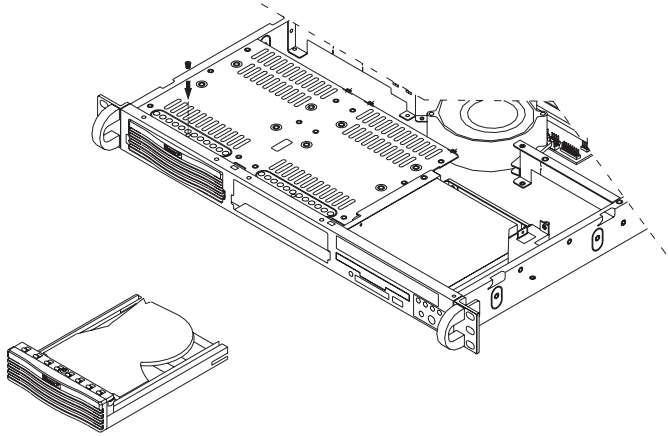
1. Mounting an IDE drive in a drive carrier

Like SCSI drives, IDE drives are also mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow. For this reason, even empty carriers without IDE drives installed must remain in the chassis. To add a new IDE drive, install a drive into the carrier with the printed circuit board side toward the carrier so that the mounting holes align with those in the carrier. Secure the drive to the carrier with the four screws.

2. Installing/removing IDE drives

The two IDE drive bays are located in the front of the chassis, making them easily accessible for installation and removal. The IDE drives are not hot-swap units, meaning system power must be turned off before installing and/or removing them. To install or remove a drive, first power down the system and then remove the top cover of the chassis. Unscrew the retention screw at the top center of the drive, then push the drive carrier out from the back until you can grasp and pull it out through the front of the chassis (see Figure 6-6). Reverse this procedure when installing a drive carrier, making sure you screw in the retention screw. Replace the top cover when finished.

Figure 6-6. Removing IDE Drives (5012B-E)



CD-ROM and Floppy Drive Installation

The top cover of the chassis must be opened to gain full access to the CD-ROM and floppy drive bays. The CD-ROM drive must have a "slim" profile to fit into the 5012B-6/5012B-E.

First, release the retention screws that secure the unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, depress the two buttons on the top of the chassis to release the top cover and at the same time, push the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server. You must power down the system before installing or removing floppy or IDE drives.

Drives mount on rails and should "click" into place to be correctly and fully installed in their bays.

- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

6-5 Power Supply

The SuperServer 5012B-6/5012B-E has a single 250 watt power supply. This power supply has an auto-switching capability, which enables it to automatically sense and operate anywhere between 110v and 220v. A power on/off switch is located at the back of the power supply. Turning this power switch to the off position will remove both main and standby power from the system.

Power Supply Failure

If the power supply unit fails, the system will shut down and you will need to replace the power supply unit. Replacement units can be ordered directly from Supermicro (see contact infomation in Chapter 1).

Replacing the Power Supply

1. Accessing the inside of the SuperServer 5012B-6/5012B-E

To replace a power supply, you must first remove the top chassis cover. To do so, first release the retention screws that secure the unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, depress the two buttons on the top of the chassis to release the top cover and push it away from you. You can then lift the top cover from the chassis to gain full access to the inside of the server.

2. Removing the power supply

First unplug the power cord from the system. To remove the failed power unit, remove the two screws on the back of the power supply, which secure it to the chassis. You can then lift the unit straight out of the chassis. (The power cord should have already been removed.)

3. Installing a new power supply

Replace the failed unit with another unit of the same wattage. It is highly recommended to replace it with the exact same power supply. Carefully insert the new unit into position in the chassis and secure it with the two screws at the rear of the unit. Before reconnecting the power cord, make sure the power switch on the power supply is in the off position. Then reconnect the power cord, replace the chassis top cover and push the unit back into the rack. Finish by turning the power switch on the power supply on, and then depress the power button on the front of the system.

Notes

Chapter 7
AwardBIOS

7-1 Introduction

This chapter describes the AwardBIOS for the SuperServer 5012B-6/ 5012B-E. The Award ROM BIOS is stored in a Flash chip and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Refer to the Manual Download area of our web site for any changes to BIOS that are not reflected in this manual.

System BIOS

The BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The AwardBIOS Flash chip stores the system parameters, such as amount of memory, type of disk drives and video displays, etc. CMOS requires very little power. When the computer is turned off, a back-up battery provides power to the BIOS Flash chip, enabling it to retain the system parameters. Each time the computer is powered-on, the computer is then configured with the values stored in the BIOS ROM by the system BIOS, which gains control when the computer is powered on.

How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing <Del> at the appropriate time during system boot.

Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Chipset and Power menus. Section 4-3 gives detailed descriptions of each parameter setting in the Setup utility.

7-2 Running Setup

**Optimal default settings are in bold text unless otherwise noted.*

The BIOS setup options described in this section are selected by choosing the appropriate text from the Main BIOS Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (see on next page).

When you first power on the computer, the AwardBIOS™ is immediately activated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Del> immediately after turning the system on, or
2. When the following message appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Del> key to activate the Main Setup Menu.

Press DEL to enter SETUP

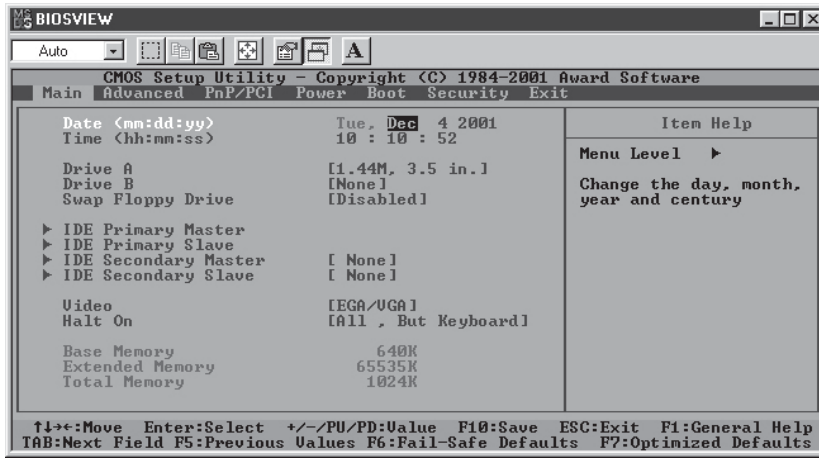
7-3 Main BIOS Setup

All Main Setup options are described in this section. The Main BIOS Setup screeen is displayed below.

Use the <Up> <Down> arrow keys or the <Tab> key to move among the different settings in the above menu.

Press the <Esc> key to exit theCMOS Setup Menu and use the <Left> <Right> arrow keys to enter the the other categories of BIOS settings. The next section is described in detail to illustrate how to navigate through the menus.

Main BIOS Setup Menu


BIOSVIEW
Auto
CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
Main Advanced PnP/PCI Power Boot Security Exit
Date (mm:dd:yy) Tue, Dec 4 2001
Time (hh:mm:ss) 10 : 10 : 52
Drive A [1.44M, 3.5 in.]
Drive B [None]
Swap Floppy Drive [Disabled]
IDE Primary Master
IDE Primary Slave
IDE Secondary Master [None]
IDE Secondary Slave [None]
Video [EGA/VGA]
Halt On [All , But Keyboard]
Base Memory 640K
Extended Memory 65535K
Total Memory 1024K
Item Help
Menu Level ▶
Change the day, month, year and century
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
TAB:Next Field F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Date/Time

Set the system date and time. Key in the correct information in the "mm", "dd" and "yy" fields. Press the "Enter" key to save the data.

Drive A/Drive B

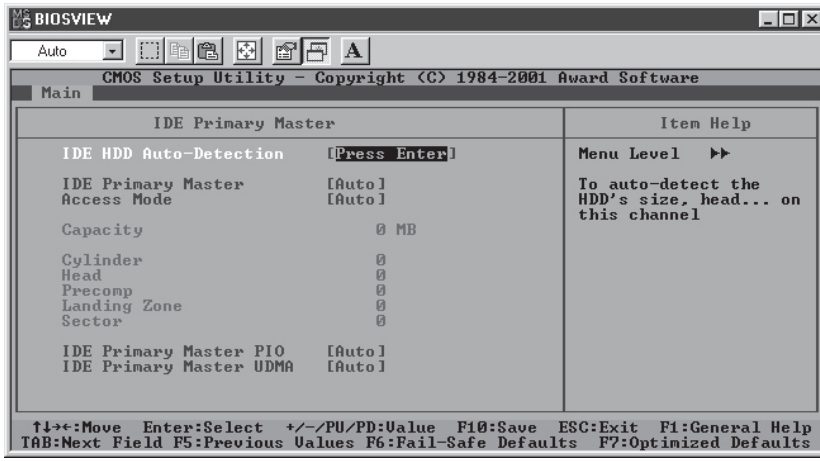
These settings allow the user to set the type of floppy disk drive installed in the system. The options are "None", "360K, 5.25 in", "1.2M, 5.25 in", "720K, 3.5 in", "1.44M, 3.5 in" and "2.88M, 3.5 in". Default settings are "1.44, 3.5" in for Drive A and "None" for Drive B.

Swap Floppy Drive

This setting allows the user to swap the designation (A and B) of the floppy disk drives installed in the system (if there are two floppy disk drives installed on the mainboard). The options are "**Disabled**" and "Enabled".

IDE Primary Master/IDE Primary Slave/IDE Secondary Master/IDE Secondary Slave

These options allow the user to set the parameters of the IDE Primary Master/Slave and IDE Secondary Master/Slave slots. Press "Enter" to activate the following sub-menu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the sub-menu are listed below:



IDE HDD Auto-Detection

Press the <Enter> key to activate the "IDE HDD Auto-Detection" function, which will allow BIOS to automatically detect the status of the IDE HDD installed in the system, such as the size and number of cylinders.

IDE Primary Master

This option allows the user to determine the manner in which the AwardBIOS sets the settings for the IDE Primary Master Device. The options are "None", "**Auto**" and "Manual."

Access Mode

This item determines the location through which the AwardBIOS accesses the IDE Primary Master Device. The settings are "CHS", "LBA", "Large", and "**Auto**".

IDE Primary Slave PIO

See the previous setting for description. The options for this setting are "**Auto**", "Mode 0", "Mode 1", "Mode 2", "Mode 3" and "Mode 4".

IDE Primary Master UDMA

This is available only when your IDE drive supports UDMA and the operating environment also includes a UDMA drive. If your IDE hard drive and your system software both support UDMA, select Auto to enabled BIOS support. The options for this setting are "**Auto**" and "Disabled".

Video

Use this setting to specify the type of display you are using with the system. Options are "**EGA/VGA**", "CGA 40", "CGA 80" and "MONO".

Halt On

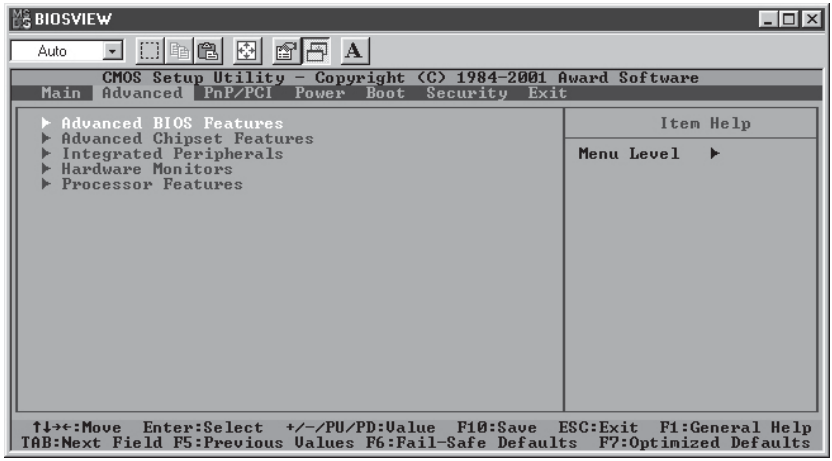
If the system encounters a non-specified error during boot-up, it will come to a halt as directed by these settings. You can tell the system to halt on "All Errors", "No Errors", "**All, But Keyboard**", "All, But Diskette" or "All, But Disk/Key".

Base Memory/Extended Memory/Total Memory

These are displays that inform you how much of each type of memory is recognized as being present in the system.

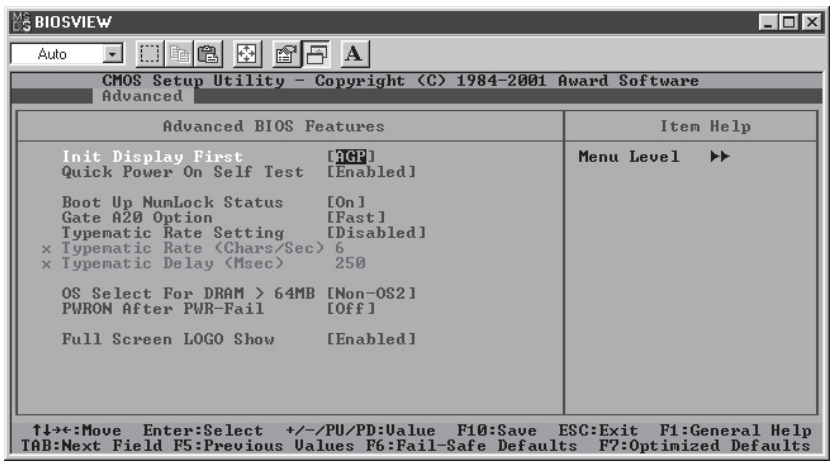
7-4 Advanced BIOS Setup

Choose Advanced BIOS Setup from the Award BIOS main menu with the Left/ Right arrow keys. You should see the following display. Select one of the items in the left frame of the screen to go to the sub screen for that item. Advanced BIOS Setup options are displayed by highlighting the option using the arrow keys. All Advanced BIOS Setup options are described in this section.



7-4.1 Advanced BIOS Features

When the item of Advanced BIOS Features is highlighted, press the <Enter> key to activate the screen below:


BIOSVIEW
Auto
CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
Advanced
Advanced BIOS Features
Item Help
Menu Level ▶▶
Init Display First [PCI]
Quick Power On Self Test [Enabled]
Boot Up NumLock Status [On]
Gate A20 Option [Fast]
Typematic Rate Setting [Disabled]
x Typematic Rate (Chars/Sec) 6
x Typematic Delay (Msec) 250
OS Select For DRAM > 64MB [Non-OS2]
PWRON After PWR-Fail [Off]
Full Screen LOGO Show [Enabled]
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
TAB:Next Field F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Init Display First

This setting allows the user to determine which device will be first displayed when the sytem boots up - a device installed in the PCI slot or a device intalled in the AGP slot. The options are "PCI slot" and "**AGP**".

Quick Power-On Self Test

If enabled, this feature will speed up the POST (Power On Self Test) routine after the computer is switched on. The settings are "**Enabled**" and "Disabled". If "Disabled", the POST will run at normal speed.

Boot Up NumLock Status

This option enables the system to check the status of the NumLock key during boot-up. The settings are "**On**" and "Off".

Gate A20 Option

This option allows the user to determine if the chipset or the keyboard controller should have the control over Gate A20. The settings are "Normal" or "Fast." If set to "Normal", a pin in the keyboard controller controls Gate A20. If "Fast" is selected, the chipset will have the control over Gate A20. The default setting is "Fast."

Typematic Rate Setting

If enabled, the option allows the user to set the number of times a key stroke repeats itself in a second when the key is held down. If disabled, the keyboard controller sets the rate.

Typematic Rate (Chars/Sec)

You may change this setting only if the Typmatic Rate Setting is enabled. This setting allows the user to set the number of times a key stroke repeats itself in a second when the key is held down. The options are: "**6**", "8", "10", "12", "15", "20", "24" and "30."

Typematic Delay

You may change this setting only if the Typmatic Rate Setting is

enabled. This setting sets the delay time after a key is held down before it begins to repeat the keystroke. The settings are: "**250**", "500", "750" and "1000."

OS Select For DRAM > 64MB

This setting should be changed only if using OS2 and your system has more than 64 MB of RAM. The options are "OS2" and "**Non-OS2**".

PWRON After PWR-Fail

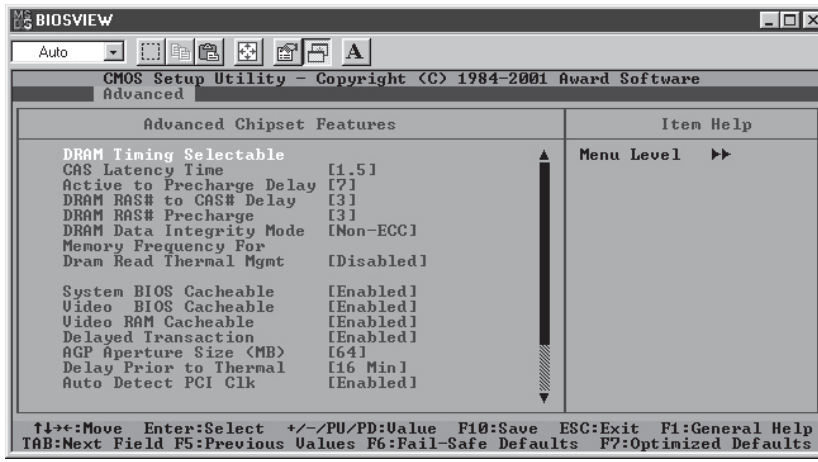
This setting allows the user to specify how the system will respond when power is reapplied after the system has gone down due to a power failure. The options are "**Off**", "On" and "Former-Sts".

Full Screen Logo Show

The options for this setting are "**Enabled**" and "Disabled".

7-4.2 Advanced Chipset Features

This section covers the functions used for configuring the system based upon the special features offered by the Plumas chipset. The chipset manages the operations of major components of the board. Normally, the default settings for the Advanced Chipset Features listed in the section are pre-configured by the manufacturer for the optimal performance of the system. It is recommended that the user does not alter the default settings. This section is provided as an emergency measure for the user to restore the functions of the system when the critical data stored in the BIOS is lost.


BIOSVIEW
Auto
CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
Advanced
Advanced Chipset Features
Item Help
DRAM Timing Selectable
CAS Latency Time [1.5]
Active to Precharge Delay [7]
DRAM RAS# to CAS# Delay [3]
DRAM RAS# Precharge [3]
DRAM Data Integrity Mode [Non-ECC]
Memory Frequency For
Dram Read Thermal Mgmt [Disabled]
System BIOS Cacheable [Enabled]
Video BIOS Cacheable [Enabled]
Video RAM Cacheable [Enabled]
Delayed Transaction [Enabled]
AGP Aperture Size (MB) [64]
Delay Prior to Thermal [16 Min]
Auto Detect PCI Clk [Enabled]
Menu Level ▸▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
TAB:Next Field F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

DRAM Timing Selectable

This item regulates dynamic random access memory (DRAM) timing. The options are "Manual" and "**By SPD**".

CAS Latency TIme

This item regulates memory column address strobe (CAS) timing. The settings are "**1.5**", "2", "2.5" and "3".

Active to Precharge Delay

This item regulates the number of memory clock cycles allowed for memory refresh charging. The options are "**7**", "6" and "5". Shorter timings increase system memory throughput at the risk of lacking sufficient refresh charge.

DRAM RAS# to CAS# Delay

This item regulates the number of memory closk cycles between strobing a row address (RAS) and a column address (CAS). Shorter numbers of clock cycles improve system memory performance at the risk of missing data. The options are "**3**" and "2".

DRAM RAS Precharge

This item regulates the number of system memory clock cycles for RAS precharging. The options are "**3**" and "2".

DRAM Data Integrity Mode

This item regulates CPU access to the data stored in the protected area of dynamic random access memory (DRAM) on the motherboard. To preserve its integrity, critical system information is usually stored in a protected area of memory. If set to the "ECC" mode, the CPU will have access to data stored in the area when performing ECC (Error Correction/Checking) activities. The options are "ECC" and "**Non-ECC**".

Memory Frequency For

This item regulates system memory frequency. The options are "PC100", "PC133" and "**Auto**".

DRAM Read Thermal Management

This item regulates the system's ability to read system thermal data. The options are "**Disabled**" and "Enabled".

System BIOS Cacheable

If enabled, the system BIOS information stored in the BIOS ROM (Read Only Memory) chip will be written and temporarily stored in the "cacheable" memory section of the CPU, giving the CPU faster access to the information. The options are "Disabled" and "**Enabled**".

Video BIOS Cacheable

If enabled, the information regarding the Video BIOS stored in the BIOS ROM (Read Only Memory) chip will be written and temporarily stored in the "cacheable" memory section of the CPU, giving the CPU faster access to the information. The options are "Disabled" and "**Enabled**".

Video RAM Cacheable

If enabled, the information regarding the Video card stored in the RAM chip (Randon Access Memory) will be written and temporarily stored in the "cacheable" memory section of the CPU, giving the CPU faster access to the information. The options are "Disabled" and "**Enabled**".

Delayed Transaction

This setting compensates for the slower speed of ISA cards on a PCI interface and so is only relevant if ISA cards are present on the motherboard. The options are "**Enabled**" and "Disabled".

AGP Aperture size (MB)

This setting allows the user to set the aperture size for the Accelerated Graphics Port (AGP). The options are "4M", "8M", "16M", "32M", "**64M**", "128M" and "256M".

Delay Prior to Thermal

The options for this setting are "4 Min", "8 Min", "**16 Min**" and "32 Min".

Auto Detect PCI Clk

This setting allows the PCI clock rate to be automatically determined. The options for this setting are "**Enabled**" and "Disabled".

On-Chip Primary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately. The options for this setting are "**Enabled**" and "Disabled".

On-Chip Secondary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately. The options for this setting are "**Enabled**" and "Disabled".

USB Controller

You should Enable this setting if your system contains a Universal Serial Bus (USB) controller (it does) and you have USB peripherals. The options for this setting are "**Enabled**" and "Disabled".

USB Keyboard Support

If enabled, this setting allows the user to activate the BIOS support of the On-Chip USB Keyboard Controller. The options are "**Disabled**" and "Enabled".

AC 97 Audio

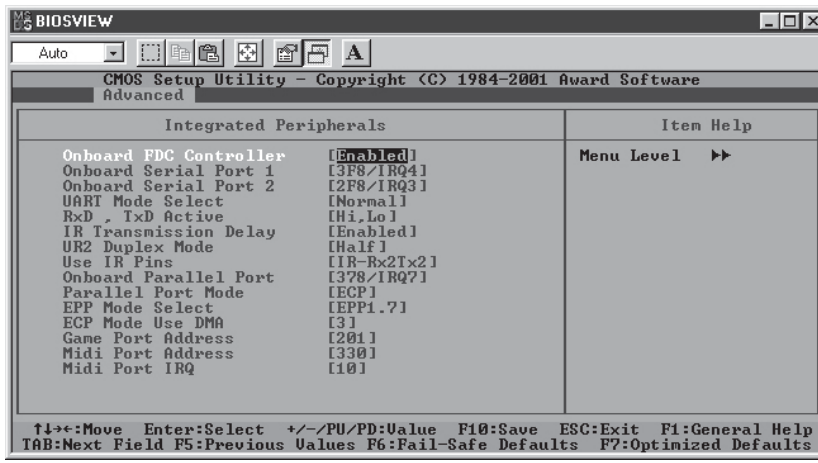
This setting allows the user to activate BIOS support for AC'97 audio. The options for this setting are "**Auto**" and "Disabled".

AC 97 Modem

This setting allows the user to activate BIOS support for the AC'97 modem. The options for this setting are "**Auto**" and "Disabled". (Requires the use of a CNR add-on card.)

7-4.3 Integrated Peripherals

When the item "Integrated Peripherals" is highlighted, press the <Enter> key to activate the following sub-menu screen.


BIOSVIEW
Auto
CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
Advanced
Integrated Peripherals
Item Help
Onboard FDC Controller [Enabled]
Onboard Serial Port 1 [3F8/IRQ4]
Onboard Serial Port 2 [2F8/IRQ3]
UART Mode Select [Normal]
RxD , TxD Active [Hi,Lo]
IR Transmission Delay [Enabled]
UR2 Duplex Mode [Half]
Use IR Pins [IR-Rx2Tx2]
Onboard Parallel Port [378/IRQ7]
Parallel Port Mode [ECP]
EPP Mode Select [EPP1.7]
ECP Mode Use DMA [3]
Game Port Address [201]
Midi Port Address [330]
Midi Port IRQ [10]
Menu Level ▸▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
TAB:Next Field F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Onboard FDC Controller

Select "Enabled", if your system has a floppy disk controller (FDC) installed on the main board and you wish to use it. The settings are "**Enabled**" and "Disabled".

Onboard Serial Port 1/Port 2

This setting allows the user to set the address and the corresponding IRQ for the Serial Port1 and Serial Port 2. The options are "Disabled" , "3F8/IRQ4", "2F8/IRQ3", "3E8/IRQ4", "2E8/IRQ3", and "Auto". The default setting for Serial Port1 is "**3F8/IRQ4**" and the default for Port 2 is is "**2F8/IRQ3**".

UART Mode Select

This setting allows the user to select the UART mode for BIOS. The options are "IrDA", "ASKIR" ans "**Normal**".

RxD, TxD Active

This setting allows the user to set the settings for the function of "RxD, TxD Active." The options are "Hi, Hi", "**Hi, Lo**", "Lo, Hi", and "Lo, Lo".

IR Transmission Delay

If "Enabled", the transmssion of IR (infrared) signals will be delayed. The options are "**Enabled**" and "Disabled".

UR2 Duplex Mode

This setting set the mode for the UR2 Duplex Mode. The options are "Full" and "**Half**".

Use IR Pins

This item sets the usage of IR pins. The options are "RxD2, TxD2" and "**IR-Rx2Tx2**".

Onboard Parallel Port

This setting allows the user to set the address and the corresponding IRQ for the onboard parallel port. The options are "Disabled", "**378/IRQ7**", "278/IRQ5" and "3BC/IRQ7".

Parallel Port Mode

This setting sets the mode for the onboard Parallel port. The options are "SPP," "EPP", "**ECP**" and "ECP+EPP".

EPP Mode Select

This setting allows the user to select the EPP port type. The options are "EPP 1.9" and "**EPP 1.7**".

ECP Mode Use DMA

This setting allows the user to select the DMA channel for the ECP mode (port) to use. The options are "1" and "**3**".

Game Port Address

This setting allows the user to set the Game Port address. The options are "Disabled", "**201**" and "209."

Midi Port Address

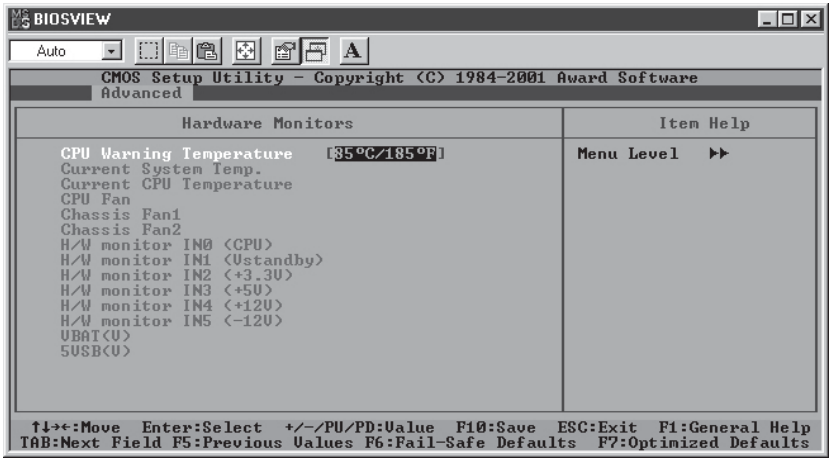
This setting allows the user to set the Midi Port address. The options are "Disabled", "**330**", "300" and "290".

Midi Port IRQ

This setting allows the user to set the Midi Port IRQ. The options are "5" and "**10**".

7-4.4 Hardware Monitors

When the item "Hardware Monitors" is highlighted, press the <Enter> key to activate the following sub-menu screen.



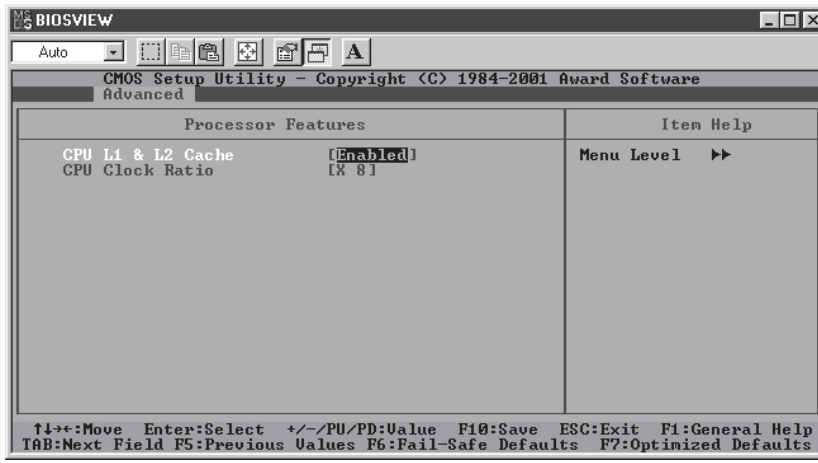
There is only one setting on this menu (below). The rest of this menu shows various temperatures and voltage levels.

CPU Warning Temperature

This item allows the user to set the CPU temperature threshold. When the CPU temperature reaches the threshold temperature set by the user, the alarm will be set off and a warning message will be displayed on the screen. The options are "**Disabled**", "50°C/122°F", "60°C/140°F", "65°C/149°F", "70°C/167°F", "75°C/167°F", "80°C/176°F" and "85°C/185°F".

7-4.5 Processor Features

When the item "Processor Features" is highlighted, hit the <Enter> key to activate the sub-menu shown below:


BIOSVIEW
Auto
CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
Advanced
Processor Features
Item Help
CPU L1 & L2 Cache [Enabled]
CPU Clock Ratio [X 8]
Menu Level ▶▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
TAB:Next Field F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

CPU L1 & L2 Cache

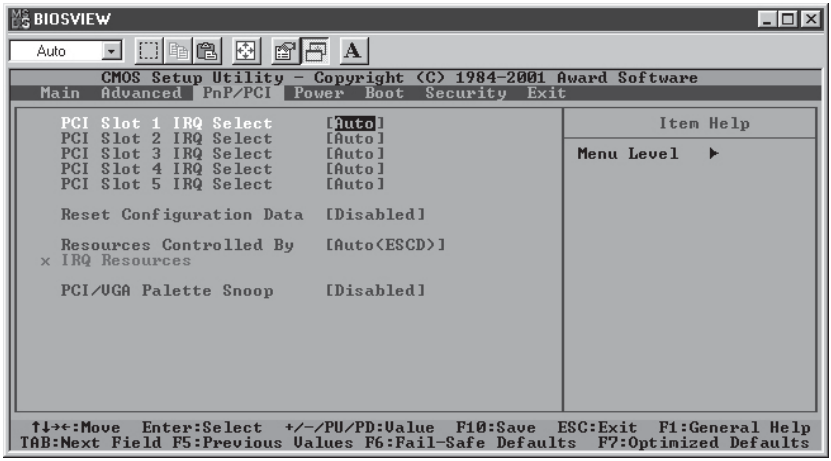
Set this option to "Enable" to activate the function of CPU L1 and L2 cache. The settings are "Disabled", and "**Enabled**".

CPU Clock Ratio

This item allows the user to change the CPU/Clock ratio. You can key in any whole number between (and including) 8 and 50. The default setting is **8** (meaning x8).

7-5 PCI/PnP Configurations

Choose PCI/PnP Configurations from the Award BIOS main menu with the Left/Right arrow keys. You should see the following display:


BIOSVIEW
Auto
CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
Main Advanced PnP/PCI Power Boot Security Exit
PCI Slot 1 IRQ Select [Auto]
PCI Slot 2 IRQ Select [Auto]
PCI Slot 3 IRQ Select [Auto]
PCI Slot 4 IRQ Select [Auto]
PCI Slot 5 IRQ Select [Auto]
Reset Configuration Data [Disabled]
Resources Controlled By [Auto(ESCD)]
x IRQ Resources
PCI/VGA Palette Snoop [Disabled]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
TAB:Next Field F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

PCI Slot 1 IRQ Select

Use this setting to select the IRQ (interrupt request) for PCI slot 1. The options are "**Auto**", "3", "4", "5", "7", "9", "10", "11", "12", "14" and "15".

PCI Slot 2 IRQ Select

Use this setting to select the IRQ (interrupt request) for PCI slot 2. The options are "**Auto**", "3", "4", "5", "7", "9", "10", "11", "12", "14" and "15".

PCI Slot 3 IRQ Select

Use this setting to select the IRQ (interrupt request) for PCI slot 3. The options are "**Auto**", "3", "4", "5", "7", "9", "10", "11", "12", "14" and "15".

PCI Slot 4 IRQ Select

Use this setting to select the IRQ (interrupt request) for PCI slot 4. The options are "**Auto**", "3", "4", "5", "7", "9", "10", "11", "12", "14" and "15".

PCI Slot 5 IRQ Select

Use this setting to select the IRQ (interrupt request) for PCI slot 5. The options are "**Auto**", "3", "4", "5", "7", "9", "10", "11", "12", "14" and "15".

Reset Configuration Data

When Enabled, this setting resets the extended system configuration data when you exit setup. Do this when you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot reboot the system. The options for this setting are "Enabled" and "**Disabled**".

Resources Controlled By

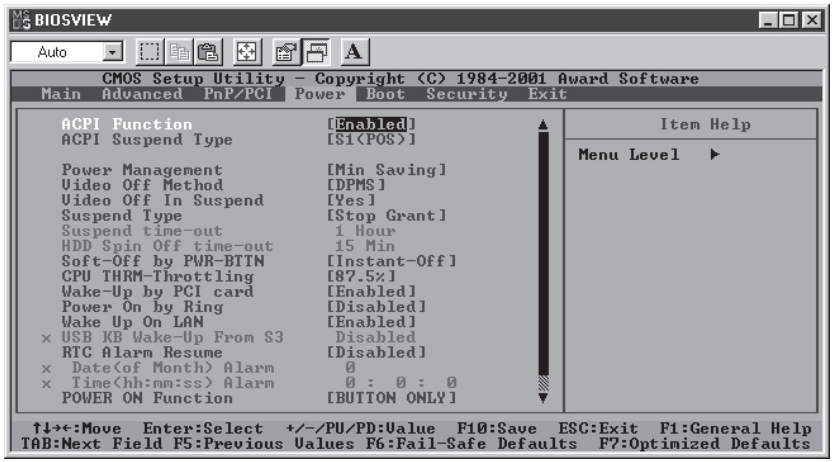
This setting allows BIOS to automatically configure all boot and Plug and Play compatible devices. If you choose Auto, you cannot select the IRQ, DMA and memory base address fields, because BIOS automatically assigns them. The options are "**Auto <ESCD>**" and "Manual".

PCI/VGA Palette Snoop

For best system performance, this item has been pre-set to "Disabled" by the manufacturer. The settings are "Enabled" and "**Disabled**".

7-6 Power

Choose Power from the Award BIOS main menu with the Left/Right arrow keys. You should see the following display:


BIOSVIEW
Auto
CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
Main Advanced PnP/PCI Power Boot Security Exit
ACPI Function [Enabled]
ACPI Suspend Type [S1(POS)]
Power Management [Min Saving]
Video Off Method [DPMS]
Video Off In Suspend [Yes]
Suspend Type [Stop Grant]
Suspend time-out 1 Hour
HDD Spin Off time-out 15 Min
Soft-Off by PWR-BTTN [Instant-Off]
CPU THRM-Throttling [87.5%]
Wake-Up by PCI card [Enabled]
Power On by Ring [Disabled]
Wake Up On LAN [Enabled]
x USB KB Wake-Up From S3 Disabled
RTC Alarm Resume [Disabled]
x Date(of Month) Alarm 0
x Time(hh:mm:ss) Alarm 0 : 0 : 0
POWER ON Function [BUTTON ONLY]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
TAB:Next Field F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

ACPI Function

This item allows you to enable and disable the ACPI (Advanced Configuration and Power Management) program. The options are "**Enabled**" and "Disabled".

ACPI Suspend Type

This item allows the user to determine the ACPI Suspend type. The options are "**S1 (POS)**" and "S3 (STR)".

Power Management

This setting sets the degree of power saving for the system, especially for HDD Power Down, Doze Mode and Suspend Mode. The options are "User Define", "**Min Saving**" and "Max Saving".

Video Off Method

This item determines the manner in which the monitor is turned off. The options are "Blank Screen", "**V/H SYNC+Blank**" and "DPMS". Select "V/H

SYNC+Blank" to turn off the vertical and horizontal synchronization ports and the monitor. Select "Blank Screen" to turn off the video buffer and the monitor. Select "DPMS" to initiate display power management signals.

Video Off in Suspend

This setting determines whether the display turns off when the system is in the Suspend Mode. The settings are "**Yes**" and "No".

Suspend Type

This item sets the system suspend Mode. The options are "**Stop Grant**" and "PWR On Suspend".

Soft-Off by PWR-BTTN

This item determines the system's "Soft-off" mode when the user presses the power-button. The options for this setting are "**Instant-Off**" and "Delay 4 sec".

CPU THRM-Throttling

THRM throttling is used to lower power consumption and reduce the heat gererated by the CPU. The options for this setting are "87.5%", "75%", "62.5%", "**50%**", "37.5%", "25%' and "12.5%'.

Wake-Up by PCI Card

If Enabled, the user is able to "wake up" the system via a PCI card. The settings are "Enabled" and "**Disabled**".

Power On by Ring

If Enabled, the user is able to "wake up" the system via the modem. The options for this setting are "**Enabled**" and "Disabled".

Wake Up on LAN

If Enabled, the user is able to "wake up" the system via the LAN. The options for this setting are "**Enabled**" and "Disabled".

Resume by Alarm

If Enabled, this setting will allow the AwardBIOS to turn on the system via the real-time clock (RTC). The options are "Enabled" and "**Disabled**".

Date (of Month) Alarm

Set the date for RTC alarm wake up in this field.

Time (hh:mm:s) Alarm

Set the time for RTC alarm wake up in this field.

POWER ON Function

This setting allows the user to determine the method by which the system power is activated. The options are "Password", "Hot Key", "Mouse Left", "Mouse Right", "Any Key", "**Button Only**" and "Keyboard 98".

KB Power On Password

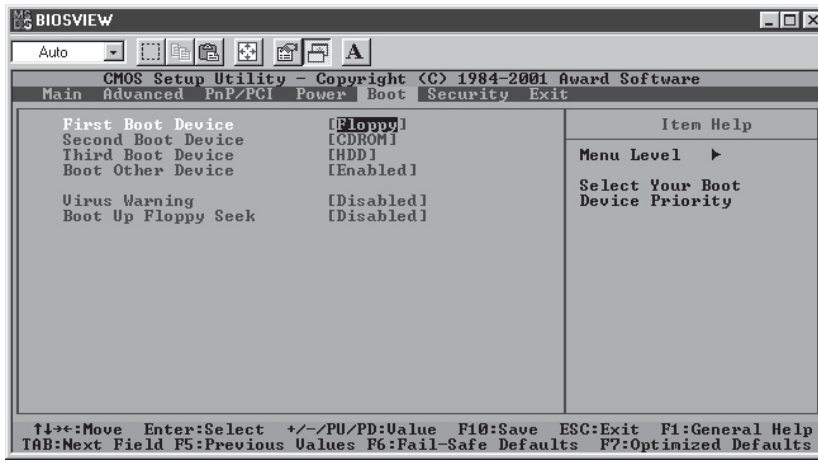
This setting allows the user to set the password to activate the Power On function through the keyboard. Press <Enter> to enter the password.

Hot Key Power On

This option allows the user to set the hot key to activate the power on function. The settings are "**Ctrl F1**", "Ctrl F2", "Ctrl F3", "Ctrl F4", "Ctrl F5", "Ctrl F6", "Ctrl F7", "Ctrl F8", "Ctrl F9", "Ctrl F10", "Ctrl F11" and "Ctrl F12".

7-7 Boot

Choose Boot from the Award BIOS main menu with the Left/Right arrow keys. You should see the following display:


BIOSVIEW
Auto
CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
Main Advanced PnP/PCI Power Boot Security Exit
First Boot Device [Floppy]
Second Boot Device [CDROM]
Third Boot Device [HDD]
Boot Other Device [Enabled]
Virus Warning [Disabled]
Boot Up Floppy Seek [Disabled]
Item Help
Menu Level ▶
Select Your Boot Device Priority
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
TAB:Next Field F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Award BIOS attempts to load the operating system from devices specified by the users in a user-specified sequence.

First Boot Device

This item allows the user to set the first boot-up device. The options are "**Floppy**", "LS120", "HDD", "SCSI", "CDROM", "ZIP100", "USB-FDD", "USB-ZIP", "USB-CDROM", "USB-HDD", "LAN" and "Disabled".

Second Boot Device

This item allows the user to set the second boot-up device. The options are "Floppy", "LS120", "HDD", "SCSI", "**CDROM**", "ZIP100", "USB-FDD", "USB-ZIP", "USB-CDROM", "USB-HDD", "LAN" and "Disabled".

Third Boot Device

This item allows the user to set the third boot-up device. The options are "Floppy", "LS120", "**HDD**", "SCSI", "CDROM", "ZIP100", "USB-FDD", "USB-ZIP", "USB-CDROM", "USB-HDD", "LAN" and "Disabled".

Boot Other Device

If enabled, this option enables the BIOS to load the OS from another device rather than the ones that have been specified as the first, second and third boot up devices. The settings are "**Enabled**" and "Disabled".

Virus Warning

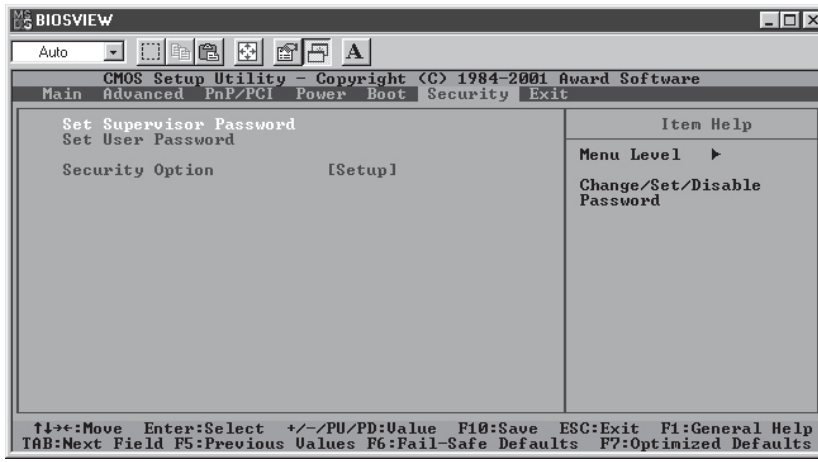
This item allows the user to choose the VIRUS Warning feature for IDE Hard Drive Disk boot sector protection. If this function is enabled and someone attempts to write data into this area, the BIOS will display a warning message and an alarm will sound. The settings are "Enabled", and "**Disabled**".

Boot Up Floppy Seek

Set this option to "Enabled" to allow the BIOS to test floppy drives to determine whether they have 40 tracks or 80 tracks. The settings are "Enabled" or "**Disabled**".

7-8 Security

Choose Security from the Award BIOS main menu with the Left/Right arrow keys. You should see the following display:


BIOSVIEW
Auto
CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
Main Advanced PnP/PCI Power Boot Security Exit
Set Supervisor Password
Set User Password
Security Option [Setup]
Item Help
Menu Level ▶
Change/Set/Disable Password
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
TAB:Next Field F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Set Supervisor Password

When the item "Set Supervisor Password" is highlighted on the above screen, press the <Enter> key. When prompted, type the Supervisor Password in the dialogue box to set or to change the Supervisor Password.

Set User Password

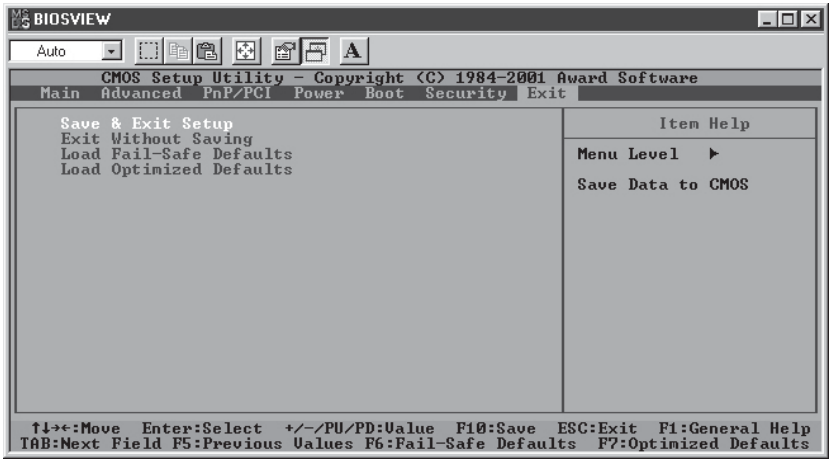
When the item "Set User Password" is highlighted on the above screen, press the <Enter> key. When prompted, type the User Password in the dialogue box to set or to change the User Password.

Security Option

This setting allows the user to determine if the password is required every time when the system boots up or if the password is required only when you enter the CMOS setup. The options are "System" and "**Setup**".

7-9 Exit

Choose Exit from the Award BIOS main menu with the Left/Right arrow keys. You should see the following display:


BIOSVIEW
Auto
CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
Main Advanced PnP/PCI Power Boot Security Exit
Save & Exit Setup
Exit Without Saving
Load Fail-Safe Defaults
Load Optimized Defaults
Item Help
Menu Level ▶
Save Data to CMOS
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
TAB:Next Field F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Save & Exit Setup

When the item "Save & Exit Setup" is highlighted, press <Enter> to save the changes you've made in the BIOS program (CMOS) and exit. Your system should, then, continue with the boot-up procedure.

Exit without Saving

When the item "Exit without Saving" is highlighted, press <Enter> to exit the Setup routine without saving any changes you may have made. Your system should then continue with the boot-up procedure.

Load Fail-Safe Defaults

Highlight this item and hit <Enter> to load the default settings for all items in the BIOS Setup. These are the safest settings to use.

Load Optimized Defaults

Highlight this item and hit <Enter> to load the optimized settings for all items in the BIOS Setup. These settings provide you with optimal system performance.

Appendix A
AwardBIOS POST Messages

During the Power-On Self-Test (POST), the BIOS will check for errors. If an error is found and a correction is needed, the BIOS will activate an alarm or display a message.

If a message is displayed, it will be accompanied by the following:

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

POST Beep Codes

Currently, there are two kinds of beep codes used in AwardBIOS. One code indicates that a video error has occurred and that the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps. The other code indicates that a Rambus error has occurred. This beep code consists of a single long beep that sounds repeatedly.

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list includes messages for both the ISA and the EISA BIOS.

CMOS BATTERY HAS FAILED

The CMOS battery is no longer functional. It should be replaced.

CMOS CHECKSUM ERROR

The CMOS hecksum is incorrect. This can indicate that CMOS has been corrupted. This error may have been caused by a weak battery. Check the battery and replace if necessary.

DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER

No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain the proper system boot files. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also make sure the disk has been formatted as a boot device. Then reboot the system.

DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP

The type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.

DISPLAY SWITCH IS SET INCORRECTLY

The display switch on the motherboard can be set to either monochrome or color. This indicates that the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper or enter Setup and change the VIDEO selection.

DISPLAY TYPE HAS CHANGED SINCE LAST BOOT

Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

ERROR ENCOUNTERED INITIALIZING HARD DRIVE

The hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.

ERROR INITIALIZING HARD DISK CONTROLLER

Cannot initialize the controller. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check to see if any jumper needs to be set correctly on the hard drive.

FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT

Cannot find or initialize the floppy drive controller. Make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

KEYBOARD ERROR OR NO KEYBOARD PRESENT

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during boot up.

If you are intentionally configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

Memory Address Error at ...

Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

Memory parity Error at ...

Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

Memory Verify Error at ...

Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.

OFFENDING ADDRESS NOT FOUND

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

OFFENDING SEGMENT:

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.

PRESS A KEY TO REBOOT

This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.

PRESS F1 TO DISABLE NMI, F2 TO REBOOT

When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

RAM PARITY ERROR - CHECKING FOR SEGMENT ...

Indicates a parity error in Random Access Memory.

SYSTEM HALTED, (CTRL-ALT-DEL) TO REBOOT ...

Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.

FLOPPY DISK(S) fail (80) → Unable to reset floppy subsystem.

FLOPPY DISK(S) fail (40) → Floppy Type dismatch.

Hard Disk(s) fail (80) → HDD reset failed
Hard Disk(s) fail (40) → HDD controller diagnostics failed.

Hard Disk(s) fail (20) → HDD initialization error.

Hard Disk(s) fail (10) → Unable to recalibrate fixed disk.

Hard Disk(s) fail (08) → Sector Verify failed.

Keyboard is locked out - Unlock the key.

BIOS detect the keyboard is locked. P17 of the keyboard controller is pulled low.

Keyboard error or no keyboard present.

Cannot initialize the keyboard. Make sure that the keyboard is attached correctly and no keys are being pressed during the boot.

Manufacturing POST loop.

System will repeat POST procedure infinitely while the P15 of keyboard controller is pulled low. This is also used for M/B burn in testing.

BIOS ROM checksum error - System halted.

The checksum of ROM address F0000H-FFFFFH is bad.

Memory test fail..

BIOS reports the a memory test fail if the onboard memory has an error.

Appendix B
AwardBIOS POST Codes

This section lists the POST (Power On Self Testing) Codes for the Award BIOS.

POST (hex)	Description
CFh	Test CMOS R/W functionality.
C0h	Early chipset initialization: -Disable shadow RAM -Disable L2 cache (socket 7 or below) -Program basic chipset registers
C1h	Detect memory -Auto-detection of DRAM size, type and ECC. -Auto-detection of L2 cache (socket 7 or below)
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM.
0h1	Expand the Xgroup codes locating in physical address 1000:0
02h	Reserved
03h	Initial Superio_Early_Init switch.
04h	Reserved
05h	1. Blank out screen 2. Clear CMOS error flag
06h	Reserved
07h	1. Clear 8042 interface 2. Initialize 8042 self-test
08h	1. Test special keyboard controller for Winbond 977 series Super I/O chips. 2. Enable keyboard interface.
09h	Reserved
0Ah	● Disable PS/2 mouse interface (optional). ● Auto detect ports for keyboard & mouse followed by a port & interface swap (optional). ● Reset keyboard for Winbond 977 series Super I/O chips.
0Bh	Reserved
0Ch	Reserved
0Dh	Reserved
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.

Debuggig LED Encoding

Post Code	Encoded LED	Task
C1h	001b	Memory Detection
05h	010b	BIOS Shadowing
07h	011b	KBC Initialization
0Eh	100b	Shadow RAM test
14h	101b	Chipset defaults loaded
26h	110b	Clock generator configured
2Bh	111b	Video initialization
52h	000b	Just clear LEDs

POST (hex)	Description
0Fh	Reserved
10h	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support.
11h	Reserved
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override.
13h	Reserved
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
15h	Reserved
16h	Initial Early_Init_Onboard_Generator switch.
17h	Reserved
18h	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686).
19h	Reserved
1Ah	Reserved
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.
1Ch	Reserved
1Dh	Initial EARLY_PM_INIT switch.
1Eh	Reserved
1Fh	Load keyboard matrix (notebook platform)
20h	Reserved
21h	HPM initialization (notebook platform)
22h	Reserved
23h	1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute. 2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead. 3. Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information. 4. Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots. 5. Early PCI initialization: -Enumerate PCI bus number -Assign memory & I/O resource -Search for a valid VGA device & VGA BIOS, and put it into C000:0.
24h	Reserved
25h	Reserved
26h	Reserved
27h	Initialize INT 09 buffer
28h	Reserved
29h	• Program CPU internal MTRR (P6 & PII) for 0-640K memory address. • Initialize the APIC for Pentium class CPU. • Program early chipset according to CMOS setup. Example: onboard IDE controller. • Measure CPU speed. • Invoke video BIOS.
2Ah	Reserved
2Bh	Reserved
2Ch	Reserved

POST (hex)	Description
2Dh	1. Initialize multi-language 2. Put information on screen display, including Award title, CPU type, CPU speed ….
2Eh	Reserved
2Fh	Reserved
30h	Reserved
31h	Reserved
32h	Reserved
33h	Reset keyboard except Winbond 977 series Super I/O chips.
34h	Reserved
35h	Reserved
36h	Reserved
37h	Reserved
38h	Reserved
39h	Reserved
3Ah	Reserved
3Bh	Reserved
3Ch	Test 8254
3Dh	Reserved
3Eh	Test 8259 interrupt mask bits for channel 1.
3Fh	Reserved
40h	Test 8259 interrupt mask bits for channel 2.
41h	Reserved
42h	Reserved
43h	Test 8259 functionality.
44h	Reserved
45h	Reserved
46h	Reserved
47h	Initialize EISA slot
48h	Reserved
49h	1. Calculate total memory by testing the last double word of each 64K page. 2. Program writes allocation for AMD K5 CPU.
4Ah	Reserved
4Bh	Reserved
4Ch	Reserved
4Dh	Reserved
4Eh	1. Program MTRR of M1 CPU 2. Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range. 3. Initialize the APIC for P6 class CPU. 4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.
4Fh	Reserved
50h	Initialize USB
51h	Reserved
52h	Test all memory (clear all extended memory to 0)
53h	Reserved
54h	Reserved
55h	Display number of processors (multi-processor platform)
56h	Reserved
57h	1. Display PnP logo 2. Early ISA PnP initialization -Assign CSN to every ISA PnP device.

POST (hex)	Description
58h	Reserved
59h	Initialize the combined Trend Anti-Virus code.
5Ah	Reserved
5Bh	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5Ch	Reserved
5Dh	1. Initialize Init_Onboard_Super_IO switch. 2. Initialize Init_Onboard_AUDIO switch.
5Eh	Reserved
5Fh	Reserved
60h	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility.
61h	Reserved
62h	Reserved
63h	Reserved
64h	Reserved
65h	Initialize PS/2 Mouse
66h	Reserved
67h	Prepare memory size information for function call: INT 15h ax=E820h
68h	Reserved
69h	Turn on L2 cache
6Ah	Reserved
6Bh	Program chipset registers according to items described in Setup & Auto-configuration table.
6Ch	Reserved
6Dh	1. Assign resources to all ISA PnP devices. 2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to “AUTO”.
6Eh	Reserved
6Fh	1. Initialize floppy controller 2. Set up floppy related fields in 40:hardware.
70h	Reserved
71h	Reserved
72h	Reserved
73h	(Optional Feature) Enter AWDFLASH.EXE if : -AWDFLASH is found in floppy drive. -ALT+F2 is pressed
74h	Reserved
75h	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM…..
76h	Reserved
77h	Detect serial ports & parallel ports.
78h	Reserved
79h	Reserved
7Ah	Detect & install co-processor
7Bh	Reserved
7Ch	Reserved
7Dh	Reserved
7Eh	Reserved
7Fh	1. Switch back to text mode if full screen logo is supported. -If errors occur, report errors & wait for keys -If no errors occur or F1 key is pressed to continue: ◆Clear EPA or customization logo.

POST (hex)	Description
80h	Reserved
81h	Reserved
82h	1. Call chipset power management hook. 2. Recover the text font used by EPA logo (not for full screen logo) 3. If password is set, ask for password.
83h	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	1. USB final Initialization 2. NET PC: Build SYSID structure 3. Switch screen back to text mode 4. Set up ACPI table at top of memory. 5. Invoke ISA adapter ROMs 6. Assign IRQs to PCI devices 7. Initialize APM 8. Clear noise of IRQs.
86h	Reserved
87h	Reserved
88h	Reserved
89h	Reserved
90h	Reserved
91h	Reserved
92h	Reserved
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	1. Enable L2 cache 2. Program boot up speed 3. Chipset final initialization. 4. Power management final initialization 5. Clear screen & display summary table 6. Program K6 write allocation 7. Program P6 class write combining
95h	1. Program daylight saving 2. Update keyboard LED & typematic rate
96h	1. Build MP table 2. Build & update ESCD 3. Set CMOS century to 20h or 19h 4. Load CMOS time into DOS timer tick 5. Build MSIRQ routing table.
FFh	Boot attempt (INT 19h)

Notes

Appendix C
System Specifications

Processors
Single Intel Pentium® 4 478-pin micro FCPGA 1.40 to 2.60 GHz processors at a 400 MHz system bus speed

Memory Capacity
3 DIMM slots to support a maximum of 3 GB unbuffered, low-profile PC133/100 SDRAM

DIMM Sizes
128 MB / 256 MB / 512 MB 1 GB 168-pin SDRAM modules supported

SCSI Controller (5012B-6 only)
Adaptec AIC-7899 for dual channel Ultra160 SCSI

SCSI Backplane Controller (5012B-6 only)
SCA backplane for two (2) SCA hot-swap SCSI drives

Main Drive Bays
5012B-6: Two (2) drive bays to house two (2) standard **1" 80-pin** SCA SCSI drives
5012B-E: Two (2) drive bays to house two (2) 3.5 x 1" IDE disk drives

Peripheral Bays
One (1) 3.5" floppy drive
One (1) slim CD-ROM drive

PCI Expansion Slots
One (1) 32-bit 33 MHz (5V) PCI slot (bundled with a 32-bit, 33 MHz 5V riser card)

Power Supply
Type: 1 x 250W with +3.3V, +5V, +12V, -5V and -12V main DC outputs and a 5V standby output.
Input Voltage: 100-240VAC (w/ ± 10% tolerance - units are auto-switching capable)
Fans: Two 4-cm ball bearing fans

Safety Regulations: UL 1950, CUL, TUV
EMI: FCC part 15, CISPR 22 (EN 55022)

System Operating Environment

Operating Temperature Range: 10 - 35 degrees C / 50 - 90 degrees F
Operating Humidity Range: 8 - 80% (non-condensing)

Cooling Fans

System: One (1) 10-cm ball bearing blower fan

Form Factor

P4SBR/P4SBE motherboard: ATX
SC810 chassis: 1U rackmount

Operating Systems Supported

Windows NT, Windows 2000, Solaris, Netware, SCO UNIX and Linux

Dimensions

16.7 x 1.7 x 22.7 in.; 425 x 44 x 560 mm (W x H x D)

Weight

Net: Full System: ~26 lbs. (11.8 kg.)
Gross: Full System: ~32 lbs. (14.5 kg.)

Regulations

FCC Class B, CE, UL, TUV